SONY

MULTI ACCESS VIDEO AND AUDIO SERVER

VSR-2000

SDI MPEG ENCODER BOARD

BKSR-2020

ANALOG MPEG ENCODER BOARD

BKSR-2021

SDI OUTPUT MPEG DECODER BOARD

BKSR-2030

ANALOG MPEG DECODER BOARD

BKSR-2031

100BASE-T BOARD

BKSR-2070

9GB HDD UNIT

BKSH-209G

18GB HDD UNIT

BKSH-218G

36GB HDD UNIT

BKSH-236G

SERVICE MANUAL

1st Edition (Revised 1)

VideoStore™

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

VSR-2000 (SY)	Serial No.10001 and Higher
BKSR-2020 (SY)	Serial No.10001 and Higher
BKSR-2021 (SY)	Serial No.10001 and Higher
BKSR-2030 (SY)	Serial No.10001 and Higher
BKSR-2031 (SY)	Serial No.10001 and Higher
BKSR-2070 (SY)	Serial No.10001 and Higher
BKSH-209G (SY)	Serial No.10001 and Higher
BKSH-218G (SY)	Serial No.10001 and Higher
BKSH-236G (SY)	Serial No.10001 and Higher

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ.
Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

ADVARSEL!

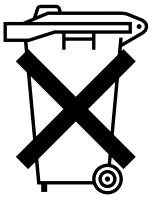
Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

Voor de klanten in Nederland

Dit apparaat bevat een MnO_2-Li batterij voor memory back-up.

Raadpleeg uw leverancier over de verwijdering van de batterij op het moment dat u het apparaat bij einde levensduur afdankt.

Gooi de batterij niet weg. maar lever hem in als KCA.



Bij dit produkt zijn batterijen geleverd. Wanneer deze leeg zijn, moet u ze niet weggooien maar inleveren als KCA.

Für Kunden in Deutschland

Entsorgungshinweis: Bitte werfen Sie nur entladene Batterien in die Sammelboxen beim Handel oder den Kommunen. Entladen sind Batterien in der Regel dann, wenn das Gerät abschaltet und signalisiert "Batterie leer" oder nach längerer Gebrauchsdauer der Batterien "nicht mehr einwandfrei funktioniert". Um sicherzugehen, kleben Sie die Batteriepole z.B. mit einem Klebestreifen ab oder geben Sie die Batterien einzeln in einen Plastikbeutel.

http://getMANUAL.com

Table of Contents

Manual Structure

Purpose of this manual ..... 5 (E)
Related manuals ..... 5 (E)
Contents ..... 6 (E)
Trademarks ..... 6 (E)

1. Operating Instructions

2. Upgrading

2-1. RS-232C Connection ..... 2-1 (E)
2-2. Upgrading the ROM on Board ..... 2-3 (E)
2-3. Upgrading the BOOT OS ..... 2-10 (E)

3. Diagnostics

3-1. RS-232C Connection ..... 3-1 (E)
3-2. Uploading and Downloading the Contents of Memory (SY-283 board) ..... 3-3 (E)
3-3. Uploading and Downloading the Contents of Memory (PU-113 board) ..... 3-6 (E)

4. Replacement of Main Parts and Boards

4-1. Cautions before Servicing ..... 4-1 (E)
4-2. Removal/Installation of Cabinet ..... 4-2 (E)
4-2-1. Front Panel Removal/Installation ..... 4-2 (E)
4-2-2. Cover Removal/Installation ..... 4-2 (E)
4-3. Location of Main Parts and Boards ..... 4-3 (E)
4-4. General Information for Parts Replacement ..... 4-5 (E)
4-5. Power Supply Unit Replacement ..... 4-5 (E)
4-6. HDD Unit Replacement ..... 4-6 (E)
4-6-1. When using the BZSR-2000 Trial Version Supplied in the VSR-2000 ..... 4-6 (E)
4-6-2. How to Replace the HDD Unit without Stopping Operation of the System When Operated Applications Other Than BZSR-2000 ..... 4-8 (E)
4-7. Fan Motor Replacement ..... 4-10 (E)
4-7-1. Checking the Defective Fan Motor Unit ..... 4-10 (E)
4-7-2. Fan Motor Unit Replacement ..... 4-11 (E)
4-7-3. Fan Motor Replacement ..... 4-12 (E)

4-8. Filter Replacement ..... 4-13 (E)
4-8-1. Filter on the Front Panel Replacement ..... 4-13 (E)
4-9. Backup Battery Replacement ..... 4-14 (E)
4-9-1. B401 (CR2025) on the SY-283 Board Replacement ..... 4-15 (E)
4-9-2. B302 (M4T28-BR12SH1) on the SY-283 Board Replacement ..... 4-16 (E)
4-9-3. B301 (M4Z28-BR00SH1) on the PU-113 Board Replacement ..... 4-17 (E)
4-10. Boards Replacement ..... 4-18 (E)
4-10-1. CN-1405 Board ..... 4-19 (E)
4-10-2. IF-678 Board ..... 4-19 (E)
4-10-3. LE-225 Board ..... 4-20 (E)
4-10-4. MB Board Assembly ..... 4-20 (E)
4-10-5. MB-755A Board ..... 4-21 (E)
4-10-6. AC-205 Board ..... 4-22 (E)
4-10-7. MB-756 Board ..... 4-22 (E)
4-10-8. SY-283/CCM-37A Boards ..... 4-23 (E)
4-10-9. PU-113 Board ..... 4-24 (E)

5. Electrical Alignment

5-1. General Information for Electrical Adjustment ..... 5-1 (E)
5-1-1. Equipment Required ..... 5-1 (E)
5-1-2. Content of Nonvolatile Memory ..... 5-1 (E)
5-2. SPG-15A Board Adjustment ..... 5-3 (E)
5-2-1. NTSC SCH Adjustment ..... 5-3 (E)
5-2-2. PAL SCH Adjustment ..... 5-5 (E)
5-3. DEC-117 Board Adjustment (BKSR-2031) ..... 5-7 (E)
5-3-1. 525/60 (NTSC) System ..... 5-7 (E)
5-3-2. 625/50 (PAL) System ..... 5-11 (E)
5-3-3. System Phase Adjustment ..... 5-13 (E)
5-3-4. Subcarrier Phase Adjustment ..... 5-14 (E)
5-4. ENC-62 Board Adjustment (BKSR-2021) ..... 5-15 (E)
5-4-1. 525/60 (NTSC) System ..... 5-15 (E)
5-4-2. 625/50 (PAL) System ..... 5-20 (E)
5-4-3. AUDIO Input Adjustment ..... 5-25 (E)
5-5. DEC-122/128 Board Adjustment (BKSR-2030) ..... 5-26 (E)
5-5-1. SDI Free Running Frequency Adjustment ..... 5-26 (E)
5-5-2. System Phase Adjustment ..... 5-27 (E)

6. Circuit Descriptions

7. Spare Parts

7-1. Notes on Repair Parts 7-1
7-2. Exploded Views 7-2
7-3. Electrical Parts List 7-12
7-3-1. Frame 7-12
7-3-2. Printed Circuit Boards List 7-13
7-3-3. Packing Materials and Supplied Accessories List 7-13
7-3-4. Power Cords List 7-13
7-3-5. Optional Fixtures List 7-13

8. Block Diagrams

Overall 8-2
PU-113 8-4
SPG-15A 8-6
SY-283 8-8
ENC-58 8-12
DEC-117 8-13
ENC-62 8-14
DEC-122/128 8-16
CCM-38A 8-17
Frame Wiring 8-18

Manual Structure

Purpose of this manual

This manual is the service manual of the VSR-2000 Multi Access Video and Audio Server and Optional Board.
This manual is intended for use by trained system and service engineers, and describes the information that premise the service board on components replacement.
Moreover, describes that information for the following optional board and HDD unit.

- SDI MPEG Encoder Board BKSR-2020
- Analog MPEG Encoder Board BKSR-2021
- SDI Output MPEG Decoder Board BKSR-2030
- Analog MPEG Decoder Board BKSR-2031
- 100BASE-T Board BKSR-2070
- 9GB HDD Unit BKSH-209G
- 18GB HDD Unit BKSH-218G
- 36GB HDD Unit BKSH-236G

Related manuals

Besides this Service Manual, the following manuals are available for the VSR-2000.

- **VSR-2000 Operation Manual (Supplied with VSR-2000)**
  This manual describes the precautions of VSR-2000 and description of each block.

- **VSR-2000/BKSR-2020/2031/BKSH-209G Installation Manual (Supplied with VSR-2000)**
  This manual describes information regarding the installation of the VSR-2000 and optional boards.

- **BKSR-2021 Installation Manual (Supplied with BKSR-2021)**
  This manual describes information regarding the installation of the BKSR-2021.

- **BKSR-2030 Installation Manual (Supplied with BKSR-2030)**
  This manual describes information regarding the installation of the BKSR-2030.

- **BKSR-2070 Installation Manual (Supplied with BKSR-2070)**
  This manual describes information regarding the installation of the BKSR-2070.

Contents

The following is a summary of all the section for understanding the contents of this manual.

Section 1 Operating Instructions

This section describes the contents of the operating instructions.

Section 2 Upgrading

This section describes the upgrading procedure of the on-board ROM and the Boot OS (operating system).

Section 3 Diagnostics

This section describes the menu, error message, and diagnostics, etc.

Section 4 Replacement of Main Parts and Boards

This section describes the removal of cabinet, replacement of main parts and boards.

Section 5 Electrical Alignment

This section describes the electrical alignment when maintenance.

Section 6 Circuit Descriptions

This section describes the circuit descriptions of main boards.

Section 7 Spare Parts

This section describes the spare parts list and exploded views.

Section 8 Block Diagrams

This section describes the overall block diagram, main board block diagrams and frame wiring.

Trademarks

- Ethernet is a registered trademark of Xerox Corporation.
- Windows is a registered trademark of Microsoft Corporation.
- IBM is a registered trademark of International Business Machine Inc.
- HyperTerminal is a registered trademark of Hilgraeve Inc.

SONY

3-867-800-**01**(1)

Multi Access Video and Audio Server

Operating Instructions Page 16 GB

VideoStore ™

VSR-2000

© 1999 by Sony Corporation

Section 1
Operating Instructions

This section is extracted from operation manual.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical chock, do not open the cabinet. Refer servicing to qualified personnel only.

VORSICHT

Um Feuergefahr und die Gefahr eines elektrischen Schlages zu vermeiden, darf das Gerät weder Regen noch Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann.

For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING
THIS APPARATUS MUST BE EARTHED.

WARNUNG
DIESES GERÄT MUSS GEERDET WERDEN.

AVERTISSEMENT
CET APPAREIL DOIT ÊTRE RELIÉ À LA TERRE.

WARNING: THIS WARNING IS APPLICABLE FOR USA ONLY.

If used in USA, use the UL LISTED power cord specified below.
DO NOT USE ANY OTHER POWER CORD.

Plug Cap	Parallel blade with ground pin (NEMA 5-15P Configuration)
Cord	Type SJT, three 16 or 18 AWG wires
Length	Less than 2.5 m (8 ft. 3 in.)
Rating	Minimum 10 A, 125 V

WARNING: Using this unit at a voltage other than 120V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

WARNING: THIS WARNING IS APPLICABLE FOR OTHER COUNTRIES.

1. Use the approved Power Cord/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
2. Use the Power Cord/Plug conforming to the proper ratings (Voltage, Ampere).

AVERTISSEMENT: CET AVERTISSEMENT EST VALABLE POUR LES AUTRES PAYS.

1. Utilisez le cordon et la fiche d'alimentation avec prise de terre, approuvés et conformes à la réglementation relative à la sécurité, adoptée par chaque pays.
2. Utilisez le cordon et la fiche d'alimentation conformes aux caractéristiques appropriées (tension, ampère).

WARNUNG: Die folgenden Warnungsangaben gelten für das Modell für andere Länder.

1. Das Nezkabel/der Netzstecker muß einen Erdungskontakt besitzen und den Sicherheitsbestimmungen Ihres Landes genügen.
2. Das Netzkabel muß ausreichende Spannungsfestigkeit besitzen und für die erforderliche Stromstärke ausgelegt sein.

For the customers in Europe
This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.
Compliance with these directives implies conformity to the following European standards:
• EN60950: Product Safety
• EN55103-1: Electromagnetic Interference (Emission)
• EN55103-2: Electromagnetic Susceptibility (Immunity)
This product is intended for use in the following Electromagnetic Environment(s):
E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors) and E4 (controlled EMC environment, ex. TV studio).

Pour les clients européens
Ce produit portant la marque CE est conforme à la fois à la Directive sur la compatibilité électromagnétique (EMC) (89/336/CEE) et à la Directive sur les basses tensions (73/23/CEE) émises par la Commission de la Communauté Européenne.
La conformité à ces directives implique la conformité aux normes européennes suivantes:
• EN60950: Sécurité des produits
• EN55103-1: Interférences électromagnétiques (émission)
• EN55103-2: Sensibilité électromagnétique (immunité)
Ce produit est prévu pour être utilisé dans les environnements électromagnétiques suivants:
E1 (résidentiel), E2 (commercial et industrie légère), E3 (urbain extérieur) et E4 (environnement EMC contrôlé ex. studio de télévision).

Für Kunden in Europa
Dieses Produkt besitzt die CE-Kennzeichnung und erfüllt sowohl die EMV-Direktive (89/336/EEC) als auch die Direktive Niederspannung (73/23/EEC) der EG-Kommission.
Die Erfüllung dieser Direktiven bedeutet Konformität für die folgenden Europäischen Normen:
• EN60950: Produktsicherheit
• EN55103-1: Elektromagnetische Interferenz (Emission)
• EN55103-2: Elektromagnetische Empfindlichkeit (Immunität)
Dieses Produkt ist für den Einsatz unter folgenden elektromagnetischen Bedingungen ausgelegt:
E1 (Wohnbereich), E2 (kommerzieller und in beschränktem Maße industrieller Bereich), E3 (Stadtbereich im Freien) und E4 (kontrollierter EMV-Bereich, z.B. Fernsehstudio).

Attention – when the product is installed in rack:

1. **Prevention against overloading of branch circuit**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. **Providing protective earth**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. **Internal air ambient tempearature of the rack**
   When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. **Prevention against achieving hazardous condition due to uneven mechanical loading**
   When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

Table of Contents

Overview 19
Features of the VSR-2000 19
Optional Boards/Units 19
Notes on Hard-Disk Drives 20

Locations and Functions of Parts 21
VSR-2000 Multi Access Video and Audio Server 21
BKSR-2020 SDI Input MPEG Encoder Board 23
BKSR-2021 Analog Input MPEG Encoder Board 23
BKSR-2030 SDI Output MPEG Decoder Board 24
BKSR-2031 Analog Output MPEG Decoder Board 24

System Configuration Example 25

Specifications 26
VSR-2000 Multi Access Video and Audio Server 26
BKSR-2020 SDI Input MPEG Encoder Board 27
BKSR-2021 Analog Input MPEG Encoder Board 27
BKSR-2030 SDI Output MPEG Decoder Board ..... Back cover
BKSR-2031 Analog Output MPEG Decoder Board ..... Back cover

Overview

The VSR-2000 Multi Access Video and Audio Server records and reproduces video and audio signals supplied from various source devices with the internal hard disks (optional) using RAID (Redundant Arrays of Inexpensive Disks) technology.
Containing four HDDs (Hard Disk Drives) for data and one HDD for parity (RAID-3 level), a single VSR-2000 unit with BKSR-209Gs (9GB HDDs) mounted achieves data recording of 36 GB (approx. 14 hours at 4 Mbps) at maximum and random access as well as simultaneous playback of five channels at maximum.

Features of the VSR-2000

MPEG-2
The VSR-2000 supports MPEG-2 MP@ML.

Flexible input/output configuration
Inputs and outputs can be flexibly arranged by installing optional boards in combination. The server supports analog composite/component inputs/outputs (RGB also selectable for outputs) and serial digital interface (SDI) inputs/outputs.

File-by-file bit rates
Files can be recorded at different bit rates and seamlessly reproduced, permitting effective use of the hard disk size.

High-speed access/random access
High-speed access/random access capabilities thanks to the hard disk array composition enable random access and simultaneous playback of 5 channels at 8 Mbps at maximum.

Variety of inputs/outputs for versatile system configuration
- MPEG-2 data file transfer via Ethernet[1)] is possible.
- The unit supports RS-422A and RS-232C ports for interface with the host computer and an RS-422A port for VTR control in encoding. In addition, commands/statuses can be sent/received to/from an external device via GPI (General-Purpose Interface). Thus, the unit has control possibilities for various applications and systems.

High reliability with RAID-3
Even if one of the HDDs is malfunctioning, the RAID-3 Array composition enables data rebuilding while maintaining the operation. The malfunctioning HDD can be replaced even with the power on.

Compact design
The unit (with a height of 5U) can be mounted in an EIA-standard 19-inch rack.

Optional Boards/Units

Input/output boards

Up to five input/output boards can be mounted in the VSR-2000 in combination of the following optional boards:

BKSR-2020 SDI Input MPEG Encoder Board
This board accepts serial digital interface (SDI) and SDI-embedded audio (4 channels) signals and encodes them to MPEG-2 data.
The encoded data are recorded on the RAID.

BKSR-2021 Analog Input MPEG Encoder Board[2)]
This board accepts analog composite or component video and analog audio (2 channel) signals and encodes them to MPEG-2 data.
The encoded data are recorded on the RAID.

BKSR-2030 SDI Output MPEG Decoder Board[2)]
This board decodes MPEG-2 data reproduced from the RAID and outputs serial digital interface (SDI) signals. The selected 2 channels of audio data decoded simultaneously with the video are output as SDI-embedded audio.

BKSR-2031 Analog Output MPEG Decoder Board
This board decodes MPEG-2 data reproduced from the RAID and outputs analog composite/component and RGB signals.
The selected 2 channels of audio data decoded simultaneously with the video are output as analog audio.

1) Ethernet is a trademark of Xerox Corporation.

2) Available in the near future

Interface board

BKSR-2070 100Base-T Interface Board [1)]
Used to transmit MPEG-2 data recorded on the RAID between multiple VSR-2000 units or between the VSR-2000 and an external PC/workstation via 100M Ethernet as files.
This board can be mounted in place of the standard 10Base-T interface board.

Hard disks

BKSH-209G 9GB HDD Unit
This is a hard disk unit of 9GB. Five of these units are to be mounted in the VSR-2000.

BKSH-218G 18GB HDD Unit [1)]
This is a hard disk unit of 18GB. Five of these units are to be mounted in the VSR-2000.

Notes on Hard-Disk Drives

Hard-Disk Drives (HDDs) are precision devices. Shock, vibration static electricity, temperature or humidity may cause trouble with HDDs or loss of data stored on a hard disk.
Be sure to pay careful attention when operating and setting up this unit.

On shock and vibration

Transporting the unit
- Be sure to pack the unit with the specified packing materials.
- Be sure to use a normal truck.
- Be sure to put a cushioning sheet[2)] on a truck.
- Avoid rough roads, potholes, etc. during transport.

When placing the unit on a floor or stand
- Gently place the unit on a flat and stable surface and use a cushioning sheet[1)].
- Do not place the unit near equipment that causes vibration.

On this unit and HDDs
- Do not drop tools on this unit or strike the unit with a tool.

Special notes
- Do not impart shock or vibration to the unit while power is supplied to the unit or during the first 30 seconds after the power is turned off.
- When a failed HDD is replaced with the power on, exercise extreme caution.

On installing and removing the unit to and from a rack

- Do not impart shock to other machines in the rack that are equipped with an HDD.
- Be sure to turn off the power of all machines in the rack that are equipped with an HDD.

On static electricity

- Be sure to remove all plastic materials that cause static electricity around the work area.
- When you handle an HDD, be sure to wear a ground band to avoid static electricity.

On temperature and humidity

- The operating and storage temperature and humidity must be maintained within the specified ranges.
- Do not supply power to the unit with the cabinet removed for ventilation.

When trouble occurs

- Even if trouble occurs, be sure to follow the cautions given above.
- Make a written record of the conditions when trouble occurred, and the precise symptoms.

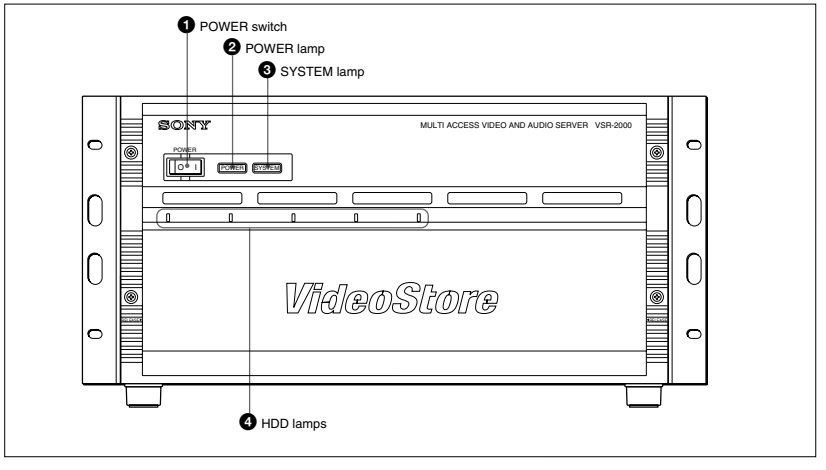
1) Available in the near future

2)The cushioning sheet should be made of polyethylene foam, with density of 38 kg/m^3, sheet resistance of 10^{11} to 10^{12} ohms, and thickness of 50 mm, or equivalent.

Locations and Functions of Parts

VSR-2000 Multi Access Video and Audio Server

Front panel



1 POWER switch
For turning on and off the power to the unit.
The power is on when the switch is set to "I" and off when set to "O."

2 POWER lamp
The lamp is lit in green when power is supplied.
It flashes if trouble occurs in the backup battery for file systems or any abnormality is detected in internal thermal monitoring.

3 SYSTEM lamp
The lamp is dark when the unit is operating normally after self-diagnosis has finished with no abnormality detected during initialization (power-up) of the system.
It flashes in red during initialization or a rebuild operation after hard disk replacement, or if any abnormality occurs in a fan, hard disk (replacement requested), or reference input.

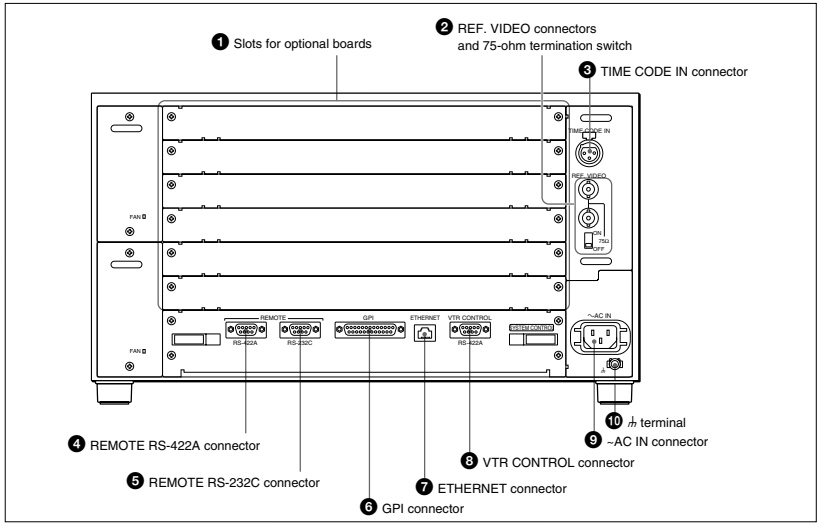
Note
If the POWER lamp flashes or the SYSTEM lamp stays flashing/lit, consult your Sony dealer.

4 HDD (hard disk drive) lamps
The lamp that corresponds to the HDD being accessed lights when the unit is operating normally after self-diagnosis has finished with no abnormality detected during initialization (power-up) of the system.

http://getMANUAL.com

Locations and Functions of Parts

Rear panel


1 Slots for optional boards
2 REF. VIDEO connectors and 75-ohm termination switch
3 TIME CODE IN connector
4 REMOTE RS-422A connector
5 REMOTE RS-232C connector
6 GPI connector
7 ETHERNET connector
8 VTR CONTROL connector
9 ~AC IN connector
10 ⏚ terminal

❶ Slots for optional boards
For the optional BKSR-2020/2021/2030/2031 input/output boards.
For installation of the optional boards, refer to the installation manual.

❷ REF. VIDEO connectors (BNC type) and 75-ohm termination switch
To input a reference video signal.
The two connectors are in loop-through condition. When loop-through output is not used, set the 75-ohm termination switch to ON.

❸ TIME CODE IN connector (XLR 3-pin, female)
To synchronize video/audio playback with a time code signal, supply an appropriate time code signal via this connector.

❹ REMOTE RS-422A connector (D-sub 9-pin, female)
Connect to the RS-422A connector of the host computer.

❺ REMOTE RS-232C connector (D-sub 9-pin, male)
Connect to the RS-232C connector of the host computer.

❻ GPI (General Purpose Interface) connector (D-sub 25-pin)
Used for command/status signal input/output between this unit and an external control device.

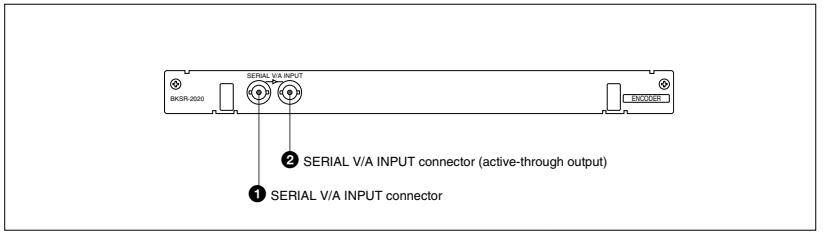
❼ ETHERNET connector (RJ-45 modular jack)
Connect to the Ethernet connector of another VSR-2000 or a computer for MPEG-2 data transmission. Transmission can be performed in 10Base-T mode with the standard configuration or in 100Base-T mode with the optional BKSR-2070 mounted.

❽ VTR CONTROL connector (D-sub 9-pin, female, conforming to the RS-422A standards)
Connect to the REMOTE connector of an external VTR.

❾ ~AC IN connector
Connect to an AC power source using an optional AC power cord.

❿ ⏚ (signal ground) terminal
For signal ground. Connect if required.

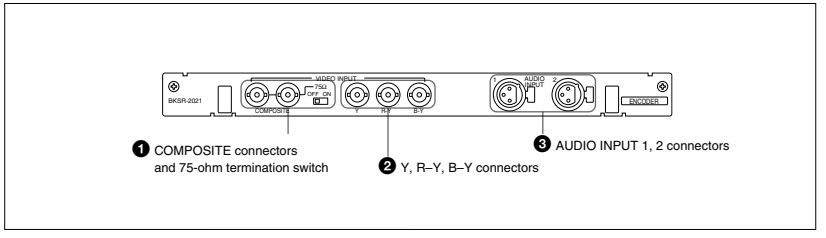
BKSR-2020 SDI Input MPEG Encoder Board



❶ SERIAL V/A INPUT (serial digital video/audio input) connector (BNC type)
To input a serial digital interface (SDI) signal.

❷ SERIAL V/A INPUT (serial digital video/audio input) connector (BNC type) (active-through output)
This connector outputs an active-through output of the supplied serial digital interface (SDI) signal. The output is not obtained when the VSR-2000 is off.

BKSR-2021 Analog Input MPEG Encoder Board

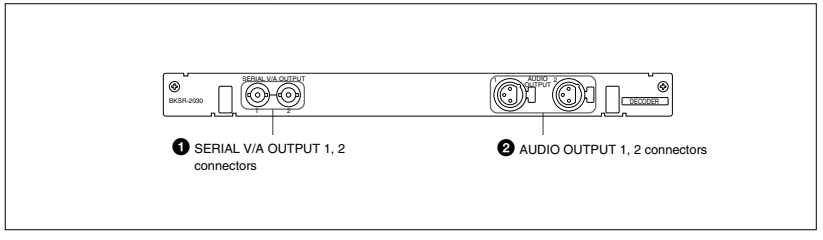


❶ COMPOSITE (analog composite video input) connectors (BNC type) and 75-ohm termination switch
To input an analog composite video signal.
The two connectors are in loop-through condition. When loop-through output is not used, set the 75-ohm termination switch to ON.

❷ Y, R–Y, B–Y (analog component video input) connectors (BNC type)
To input analog component video signals.

❸ AUDIO INPUT (analog audio input) 1 , 2 connectors (XLR 3-pin, female)
To input analog audio signals.

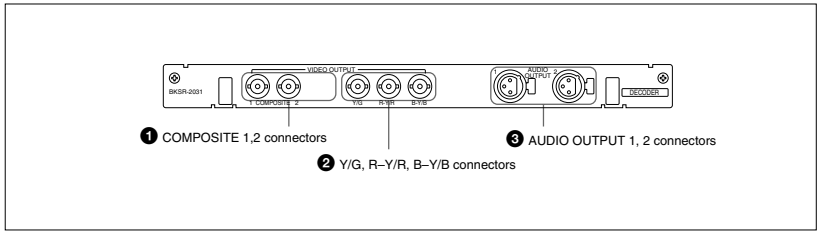
BKSR-2030 SDI Output MPEG Decoder Board



1 SERIAL V/A OUTPUT (serial digital video/ audio output) 1, 2 connectors (BNC type)
These connectors output a serial digital interface (SDI) signal.
Connector 1 and 2 output the same signal.

2 AUDIO OUTPUT (analog audio output) 1 , 2 connectors (XLR 3-pin, male)
These connectors output analog audio signals of channels 1/2 or channels 3/4.

BKSR-2031 Analog Output MPEG Decoder Board



1 COMPOSITE (analog composite video output) 1, 2 connectors (BNC type)
These connectors output an analog composite video signal.
Connector 1 and 2 output the same signal.

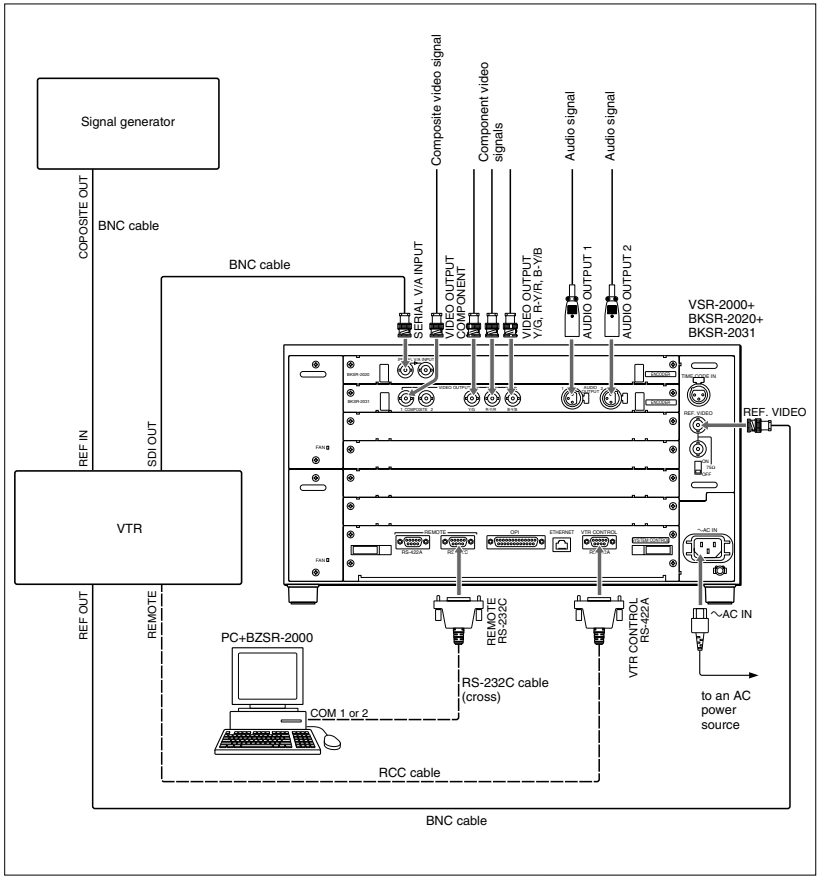
2 Y/G, R–Y/R, B–Y/B (analog component/analog RGB video output) connectors (BNC type)
These connectors output analog component video or analog RGB video signals according to the internal switch setting.
For the internal switch setting, refer to the installation manual.

3 AUDIO OUTPUT (analog audio output) 1 , 2 connectors (XLR 3-pin, male)
These connectors output analog audio signals of channels 1/2 or channels 3/4.

System Configuration Example

Install the BZSR-2000 (Simple Layout Software) sample version from the CD-ROM supplied with the VSR-2000.

For the operating procedures, refer to the on-line manual contained on the CD-ROM of the BZSR-2000 sample version.



Specifications

VSR-2000 Multi Access Video and Audio Server

General

Power requirements
AC 100 to 240 V±10%, 50/60 Hz
Current consumption
3.5 A to 1.5 A
Peak inrush current
(1) Power ON, current probe method: 20A (100V), 40A (240V)
(2) Hot switching inrush current, measured in accordance with European standard EN55103-1: 15A (230V)
Operating temperature
5°C to 40°C (41°F to 104°F)
Storage temperature
–20°C to +60°C (–4°F to +140°F)
Operating humidity
20% to 80% (no condensation)
Mass Approx. 43 kg (94 lb 13 oz)
Dimensions 424 × 221 × 647 mm (w/h/d)
($16\frac{3}{4} \times 8\frac{3}{4} \times 25\frac{1}{2}$ inches)
excl. projecting parts

Characteristics

Array composition RAID-3
Data drives: 4
Parity drive: 1

Video
Compression format
MPEG-2 MP@ML
Bit rate 4/6/8 Mbps

Audio
Compression format
MPEG1 Layer II, 384 kbps
Sampling frequency
48 kHz

Input/output connectors

TIME CODE IN XLR 3-pin, female (1)
Time code signal input
0.5 to 18.0 Vp-p, 10 kilohms, balanced
REF. VIDEO BNC type (1 input and 1 loop-through output)
Black burst signal: sync, burst 0.3 Vp-p, 75 ohms
REMOTE RS-422A
D-sub 9-pin, male (1)
Conforming to the RS-422A standards
REMOTE RS-232C
D-sub 9-pin, female (1)
Conforming to the RS-232C standards
GPI D-sub 25-pin (1), female (1), TTL level
ETHERNET RJ-45 modular jack (1)
Conforming to 10-BaseT IEEE 802.3 standards, balanced
VTR CONTROL RS-422A
D-sub 9-pin, male (1)
Conforms to the RS-422A standards

Supplied accessories

Operating instructions (1)
Installation manual (1)
Plug holder C (3-613-640-01) (1)
CD-ROM containing the BZSR-2000 sample version (1)

Optional accessories

RMM-2000 Rack Mount Kit
Power cords:
1-558-527-11 for use in North America
1-782-929-11 for use in other areas
The plug holder C (3-613-640-01) supplied with the unit can be commonly used for the above two power cords.

Design and specifications are subject to change without notice.

BKSR-2020 SDI Input MPEG Encoder Board

Characteristics

Video
Compression format
MPEG-2 MP@ML
Bit rate 4/6/8 Mbps

Audio
Compression format
MPEG1 Layer II, 384 kbps × 2
Sampling frequency
48 kHz

Input connectors

Serial digital video/audio input
SERIAL V/A INPUT
BNC type (1 input and 1 aktive-through output)
270 Mbps, 75 ohms

Supplied accessory

Operating instructions (1)

Design and specifications are subject to change without notice.

BKSR-2021 Analog Input MPEG Encoder Board

Characteristics

Video
Compression format
MPEG-2 MP@ML
Bit rate 4/6/8 Mbps

Audio
Compression format
MPEG1 Layer II, 384 kbps × 1
Sampling frequency
48 kHz

Input connectors

Composite video input
COMPOSITE BNC type (1 input and 1 loop-through output) with the 75-ohm termination switch
1.0 Vp-p, 75 ohms, sync negative

Component video inputs
Y BNC type (1), 1.0 Vp-p, 75 ohms, sync negative
R–Y BNC type (1), 0.7 Vp-p, 75 ohms
B–Y BNC type (1), 0.7 Vp-p, 75 ohms

Audio inputs
AUDIO INPUT XLR 3-pin, female (2)
Max. +24 dBm/600 ohms
(Reference: +4 dBm/600 ohms)

Supplied accessory

Operating instructions (1)

Design and specifications are subject to change without notice.

Specifications

BKSR-2030 SDI Output MPEG Decoder Board

Characteristics

Video

Compression format
MPEG-2 MP@ML
Bit rate 4/6/8 Mbps

Audio

Compression format
MPEG1 Layer II, 384 kbps × 1
Sampling frequency
48 kHz

Output connectors

Serial digital video/audio outputs

SERIAL V/A OUTPUT
BNC type (2)
270 Mbps, 75 ohms

Audio outputs

AUDIO OUTPUT XLR 3-pin, male (2)
+4 dBm±1 dB, 600 ohms

Supplied accessory

Operating instructions (1)

Design and specifications are subject to change without notice.

BKSR-2031 Analog Output MPEG Decoder Board

Characteristics

Video

Compression format
MPEG-2 MP@ML
Bit rate 4/6/8 Mbps

Audio

Compression format
MPEG1 Layer II, 384 kbps × 1
Sampling frequency
48 kHz

Output connectors

Composite video outputs

COMPOSITE BNC type (2)
1.0 Vp-p±0.1 V, 75 ohms, sync negative

Component video/RGB outputs

BNC type (3)
With component selected:

Y	1.0 Vp-p±0.1 V, 75 ohms, sync negative
R–Y	0.7 Vp-p±0.07 V, 75 ohms
B–Y	0.7 Vp-p±0.07 V, 75 ohms

With RGB selected

R	0.7 Vp-p±0.07 V, 75 ohms
G	1.0 Vp-p±0.1 V, 75 ohms, sync negative
B	0.7 Vp-p±0.07 V, 75 ohms

Audio outputs

AUDIO OUTPUT XLR 3-pin, male (2)
+4 dBm±1 dB, 600 ohms

Supplied accessory

Operating instructions (1)

Design and specifications are subject to change without notice.

お問い合わせは
「ソニー業務用製品ご相談窓口のご案内」にある窓口へ

ソニー株式会社 〒141-0001 東京都品川区北品川6-7-35
ソニーマーケティング株式会社 情報システム営業本部 〒108-0074 東京都港区高輪4-10-18

Section 2
Upgrading

2-1. RS-232C Connection

Tool

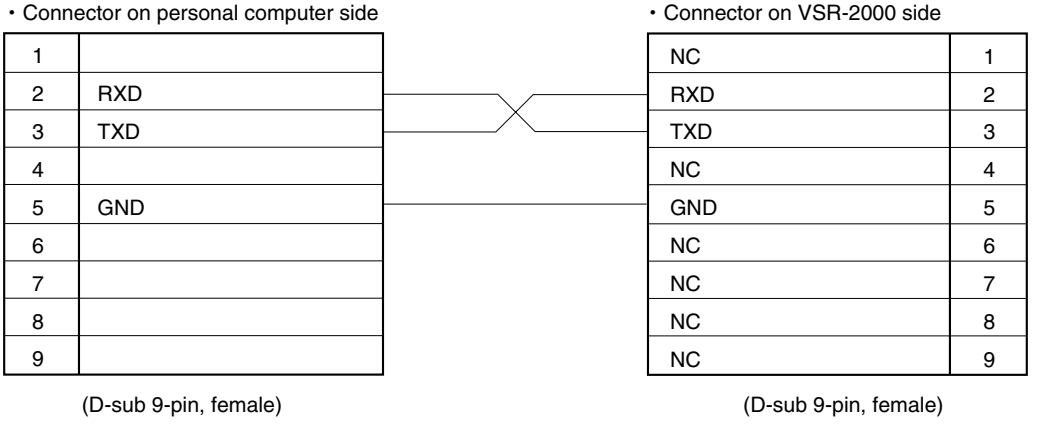
Tera Term program (with macro function) is available for upgrading.

Name	Part number
Upgrade Program	J-6450-330-A

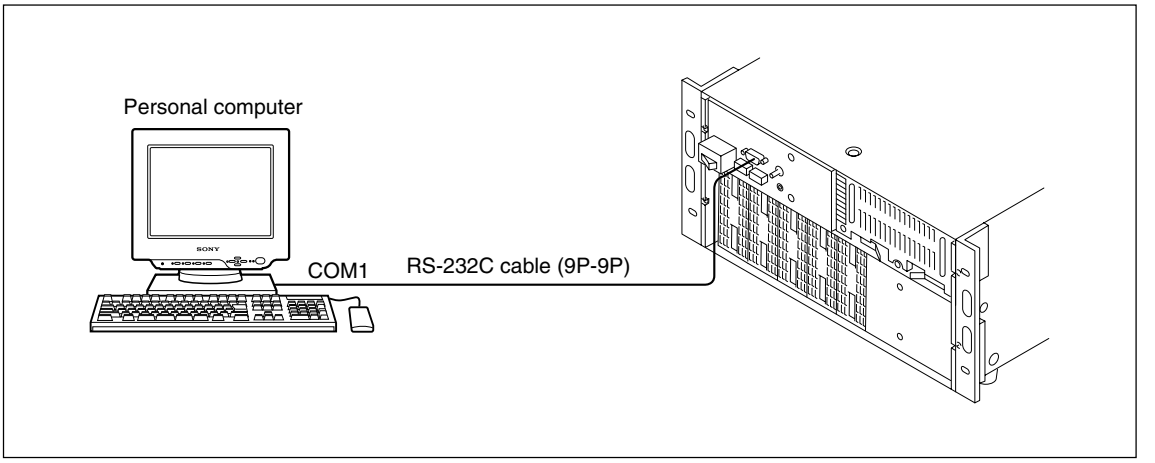
Cable (RS-232C cross cable)

Connector

D-sub 9-pin, Female 1-562-421-11 (Connector)
1-561-749-00 (Juncton shell)



Connection



Setting of communication protocol

Communication port	COM1
Baud rate	38400 bps
Parity	None
Flow control	None
Stop bit length	1 bit
Data bit length	8 bit

2-2. Upgrading the ROM on Board

This section describes how to upgrade the ROM on the board using a macro function of Tera Term.
The ROM to be upgraded is as shown below.

CPU name	Board	Ref.	File name
MAIN	SY-283	IC327, 340	PSYM∗∗∗.mot
DPC	SY-283		PSYD∗∗∗.mot
FSE	SY-283		PSYF∗∗∗.mot
CCM	SY-283		PSYC∗∗∗.mot
PU	PU-113	IC107, 112	PPU∗∗∗.mot
ENC	ENC-58 (BKSR-2020)	IC1306	PENC∗∗∗.mot
	ENC-62 (BKSR-2021)	IC1306	PAEN∗∗∗.mot
DEC	DEC-122/128 (BKSR-2030)	IC907	PDDE∗∗∗.mot
	DEC-117 (BKSR-2031)	IC907	PDEC∗∗∗.mot
CCM-38A	CCM-38A (BKSR-2070)	–	SYG∗∗∗.mot

Note

For the display example in using a personal computer, this manual differentiates between the characters displayed on the screen and the characters to be entered as shown below.

Font and style of letters	Display example	Reference for distinction
Times font	UTY>	Automatically displayed message by a program
Helvetica regular (Italic)	*SDC-UTY*	Characters to be entered
Symbols	↵	Enter key
	␣	Space equivalent to a character

Preparation

1. Remove the front panel. (Refer to Section 4-2-1.)
2. Select the target CPU using the service port selector switch.
   (Refer to Installation Manual Section 2-6-5.)
3. Connect the VSR-2000 to a personal computer and set the communication rate.
   (Refer to Section 2-1.)
4. Activate the Tera Term and select “Setup” – “Serial port” and set as follows.
   Transmit delay : 0 msec/char
   0 msec/line

1. ENC CPU (BKSR-2020/2021) and DEC CPU (BKSR-2030/2031)

Note

The display screen is an example of DEC CPU.

1. Activate Tera Term.
2. Press the [ENTER] key.
   ("DEC>" is displayed.)

```
↵
DEC>
```

Note

In the case of ENC CPU, the message ENC> appears.

3. Enter "VER" and confirm the CPU name and current software version.

```
DEC> VER↵
[DEC] Version : 1.000, Nov 18 1998
Compiled at 10 : 12 : 31
DEC>
```

4. Enter "FLASH ERASE 1".
   (Software sector 1 in the old version is erased.)

```
DEC> FLASH␣ERASE␣1↵
FLASH ERASE ERASE 1 . . . OK
DEC>
```

5. Enter "RES".
   (The program in the old version stops and the CPU is reset.)

```
DEC> RES↵
*** MONGER (MONitor/debugGER) Version 0.32 Copylight (C) 1993-96 Sony Corp. ***
(Nov 7 1996/16:42:56)
[RES]
```

6. Enter "FLASH ERASE USER".
   (The software in the old version is erased.)

```
FLASH␣ERASE USER↵
 FLASH ERASE USER
Erase Sector 1 . . . OK
Erase Sector 2 . . . OK
Erase Sector 3 . . . OK
Erase Sector 4 . . . OK
Erase Sector 5 . . . OK
Erase Sector 6 . . . OK
Erase Sector 7 . . . OK

MON>
```

7. Enter “FL”.
   (“Load Mode” is displayed.)

```
MON> FL↵
Load Mode
```

8. Select “File” – “Sendfile” from the top menu.
9. Select the file to be downloaded.
   ENC CPU
   BKSR-2020 : “PENC∗∗∗.mot”
   BKSR-2021 : “PAEN∗∗∗.mot”
   DEC CPU
   BKSR-2030 : “PDDE∗∗∗.mot”
   BKSR-2031 : “PDEC∗∗∗.mot”
10. Downloading is executed.
    CAUTION
    Never touch the screen until downloading is completed.
    If downloading is interrupted because of touching the screen, repeat steps 4 and later.

11. After downloading is completed, “OK” is displayed.

```
Load ModeOK
MON>
```

12. Enter “RES” and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)

```
MON> RES↵
∗∗∗ MONGER (MONitor/debugGER) Version 0.32 Copylight (C) 1993-96 Sony Corp. ∗∗∗
(Nov 7 1996/16:42:56)
[RES]

∗∗∗ MONGER (MONitor/debugGER) Version 0.32.2 Copylight (C) 1993-96 Sony Corp. ∗∗∗
(Oct 21 1998/15:43:16)
[Undefined]
      :
```

2. PU CPU

1. Activate Tera Term.
2. Press the [ENTER] key.
   ("PU>" is displayed.)
3. Enter "VER" and confirm the CPU name and current software version.
4. Enter "FLASH ERASE USER".
   (The software in the old version is erased.)
5. Enter "RES".
   (The software in the old version is erased and the CPU is reset automatically.)
6. Enter "FL".
   ("Load Mode" is displayed.)
7. Select "File" – "Sendfile" from the top menu.
8. Select the file ("PPU∗∗∗.mot") to be downloaded.
9. Downloading is executed.
   CAUTION
   Never touch the screen until downloading is completed.
   If downloading is interrupted because of touching the screen, repeat steps 4 and later.

10. After downloading is completed, "OK" is displayed.
11. Enter "RES" and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)

3. MAIN CPU

1. Activate Tera Term.
2. Press the [ENTER] key.
   ("MAIN>" is displayed.)
3. Enter "VER" and confirm the CPU name and current software version.
4. Enter "FLASH ERASE USER".
   (The software in the old version is erased and the CPU is reset automatically.)
5. Enter "FL".
   ("Load Mode" is displayed.)
6. Select "File" – "Sendfile" from the top menu.
7. Select the file "PSYM∗∗∗.mot" to be downloaded.
8. Downloading is executed.
   CAUTION
   Never touch the screen until downloading is completed.
   If downloading is interrupted because of touching the screen, repeat steps 4 and later.

9. After downloading is completed, "OK" is displayed.
10. Enter "RES" and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)

http://getMANUAL.com

4. DCP CPU

1. Activate Tera Term and set the communication rate.
2. Turn on the power.
   ("DCP>" is displayed.)
3. Enter "FL" and press the [ENTER] key.
4. "I will update software!! Are you sure? (yes or no)>"is displayed. Enter "yes".
5. "Flash Erase 1 2 3 4 OK" is displayed. Erase the FLASH.
6. The FLASH is erased and "Load Mode" is displayed.
7. Select "File" – "Sendfile" from the top menu.
8. Select the file ("PSYD***.mot") to be downloaded.
9. Downloading is executed.
   CAUTION
   Never touch the screen until downloading is completed.
   If downloading is interrupted because of touching the screen, repeat steps 3 and later.

10. After downloading is completed, "DownLoad End" is displayed.
11. Enter "?" and press the [ENTER] key. The software version is displayed.
12. Enter "RES" and press the [ENTER] key.

5. CCM CPU

1. Activate Tera Term.
2. Press the [ENTER] key.
   ("CCM>" is displayed.)
3. Enter "VER" and confirm the CPU name and current software version.
4. Enter "FLASH ERASE USER".
   (The software in the old version is erased and the CPU is reset automatically.)
5. Enter "FL".
   ("Load Mode" is displayed.)
6. Select "File" – "Sendfile" from the top menu.
7. Select the file ("PSYC***.mot") to be downloaded.
8. Downloading is executed.
   CAUTION
   Never touch the screen until downloading is completed.
   If downloading is interrupted because of touching the screen, repeat steps 4 and later.

9. After downloading is completed, "OK" is displayed.
10. Enter "RES" and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)

6. FSE CPU

1. Activate Tera Term.
2. Press the [ENTER] key.
   ("FSE>" is displayed.)
3. Enter "VER" and confirm the CPU name and current software version.
4. Enter "q".
   ("MON>" is displayed.)
5. Enter "FLASH ERASE USER".
   (The software in the old version is erased and the CPU is reset automatically.)
6. Enter "FL".
   ("Load Mode" is displayed.)
7. Select "File" – "Sendfile" from the top menu.
8. Select the file ("FSE***.mot") to be downloaded.
9. Downloading is executed.

   CAUTION

   Never touch the screen until downloading is completed.
   If downloading is interrupted because of touching the screen, repeat steps 5 and later.

10. After downloading is completed, "OK" is displayed.
11. Enter "RES" and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)
    ("FSE>" is displayed.)

7. CCM-38A CPU (BKSR-2070)

1. Connect the VSR-2000 with a personal computer via Ethernet. (Refer to Section 3-2).
2. Enter "ftp xx.xx.xx.xx" and press the [ENTER] key.

   Note

   Enter the IP address of VSR-2000 into the underlined portion xx.xx.xx.xx.

3. Enter "videostore".
4. Enter "mpegworld".
5. Enter "send PSYG***.hex flash2.hex".
6. Enter "bye".

```
C:¥ftp␣xx.xx.xx.xx↵
Connected to xx.xx.xx.xx
220 xx.xx.xx.xx VSR-2000FTP server (xx) ready.
User (xx.xx.xx.xx) : videostore↵
331 Password required for wing.
Password : mpegworld↵
230 User videostore logged in.

ftp>send␣SYGxxx.hex␣flash2.hex↵
200 PORT command successful.
150 Opening BINARY mode data connection for flash2.hex.
226 Transfer complete.
2152611 bytes sent in 6.54 seconds (329.15 Kbytes/sec)

ftp>bye↵

C:¥>
```

Note

The password is not displayed.

7. Remove the front panel. (Refer to Section 4-2-1.)
8. Select the target CPU using the service port selector switch.
   (Refer to Installation Manual Section 2-6-5.)
9. Connect the VSR-2000 to a personal computer and set the communication rate.
   (Refer to Section 2-1.)
10. Activate the Tera Term and select "Setup" – "Serial port" and set as follows.
    Transmit delay : 0 msec/char
    0 msec/line

11. Activate Tera Term.
12. Press the [ENTER] key.
    ("CCM-38>" is displayed.)
13. Enter "VER" and confirm the CPU name and current software version.
14. Enter "flerase -C 1".
    (Sector 1 of the old version software is erased.)
15. Enter "flprg flash2.hex".
16. Enter "RES".
    (The software in the old version stops and the CPU is reset.)
17. Enter "RES" and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)

```
CCM-38>flerase␣-C␣1↵

Now Erasing.FLASH Chip = 1

FLASH Chip = 1. Erase Finished!!

CCM-38>flprg␣flash2.hex↵

Now Programing.

Flash Program Finished.

CCM-38>RES↵
```

2-3. Upgrading the BOOT OS

This section describes how to upgrade the BOOT OS by entering commands.

1. FSE BOOT OS

1. S301-1/SY-283 board → OFF
2. Remove the front panel. (Refer to Section 4-2-1.)
3. Turn on the power.
4. Connect the VSR-2000 to a personal computer and set the communication rate. (Refer to Section 2-1.)
5. Set the service port selector switch to "0".
6. Activate Tera Term and set the communication rate. (Refer to Section 2-1.)
7. Press the [ENTER] key.
   ("MON>" is displayed.)
8. Enter "FLASH 1 ERASE BOOT"
   (The software in the old version is erased.)
9. Enter "FL 1".
   ("Load Mode" is displayed.)
10. Select "File" – "Sendfile" from the top menu.
11. Select the file "bmon1.mot" to be downloaded.
12. Downloading is executed.
    CAUTION
    Never touch the screen until downloading is completed.
    If downloading is interrupted because of touching the screen, repeat steps 8 and later.

13. After downloading is completed, "OK" is displayed.
14. Enter "RES" and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)
15. Turn off the power.
16. S301-1/SY-283 board → ON
17. Turn on the power.
18. Set the service port selector switch to "1".
19. Activate Tera Term.
20. Press the [ENTER] key.
    ("FSE>" is displayed.)
21. Enter "q".
    ("MON>" is displayed.)
22. Enter "RES" and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)

2. DPC BOOT OS

1. S301-1/SY-283 board → OFF
2. Remove the front panel. (Refer to Section 4-2-1.)
3. Turn on the power.
4. Connect the VSR-2000 to a personal computer and set the communication rate. (Refer to Section 2-1.)
5. Set the service port selector switch to “0”.
6. Activate Tera Term.
7. After the message is displayed, press the [ENTER] key.
   (“MON>” is displayed.)
8. Enter “FLASH 2 ERASE BOOT”, and press the [ENTER] key.
9. Enter “FL 2”.
   (“Load Mode” is displayed.)
10. Select “File” – “Sendfile” from the top menu.
11. Select the file “shdbxxx.src” to be downloaded.
12. Downloading is executed.

    CAUTION

    Never touch the screen until downloading is completed.
    If downloading is interrupted because of touching the screen, repeat steps 8 and later.

13. After downloading is completed, “OK” is displayed.
14. Turn off the power.
15. S301-1/SY-283 board → ON
16. Set the service port selector switch to “2”.
17. Turn on the power.
    (“DPC>” is displayed.)

3. CCM BOOT OS (CCM-37A Board)

1. S301-1/SY-283 board → OFF
2. Remove the front panel. (Refer to Section 4-2-1.)
3. Turn on the power.
4. Connect the VSR-2000 to a personal computer and set the communication rate. (Refer to Section 2-1.)
5. Set the service port selector switch to “0”.
6. Activate Tera Term.
7. Press the [ENTER] key.
   (“MON>” is displayed.)
8. Enter “FLASH 3 ERASE BOOT”
   (The software in the old version is erased.)
9. Enter “FL 3”.
   (“Load Mode” is displayed.)
10. Select “File” – “Sendfile” from the top menu.
11. Select the file “bmon2.mot” to be downloaded.
12. Downloading is executed.
    CAUTION
    Never touch the screen until downloading is completed.
    If downloading is interrupted because of touching the screen, repeat steps 9 and later.
13. After downloading is completed, “OK” is displayed.
14. Enter “RES” and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)
15. Turn off the power.
16. S301-1/SY-283 board → ON
17. Turn on the power.
18. Set the service port selector switch to “3”.
19. Activate Tera Term.
20. Press the [ENTER] key.
    (“CCM>” is displayed.)
21. Enter “RES” and confirm that a message is displayed on the screen.
    (The program in a new version is executed.)

Section 3
Diagnostics

3-1. RS-232C Connection

Tool

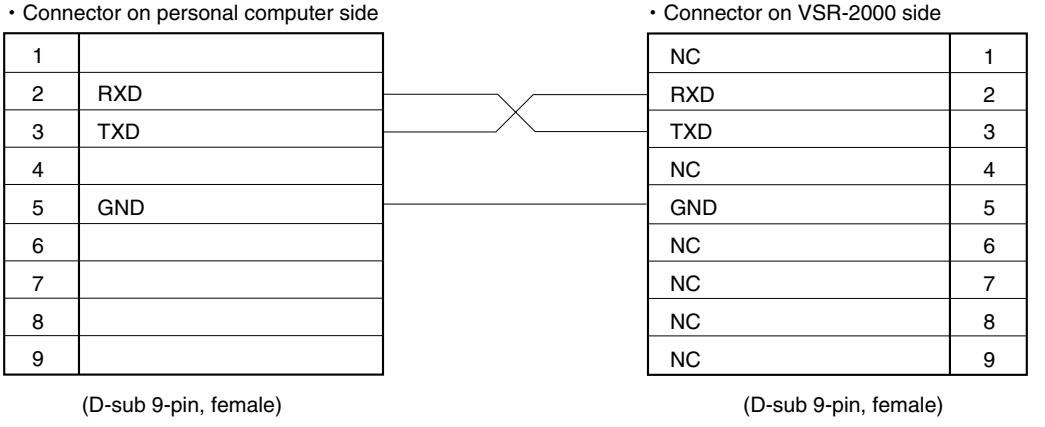
Tera Term program (with macro function) is available for processing in Section 3-3.

Name	Part number
Upgrade Program	J-6450-330-A

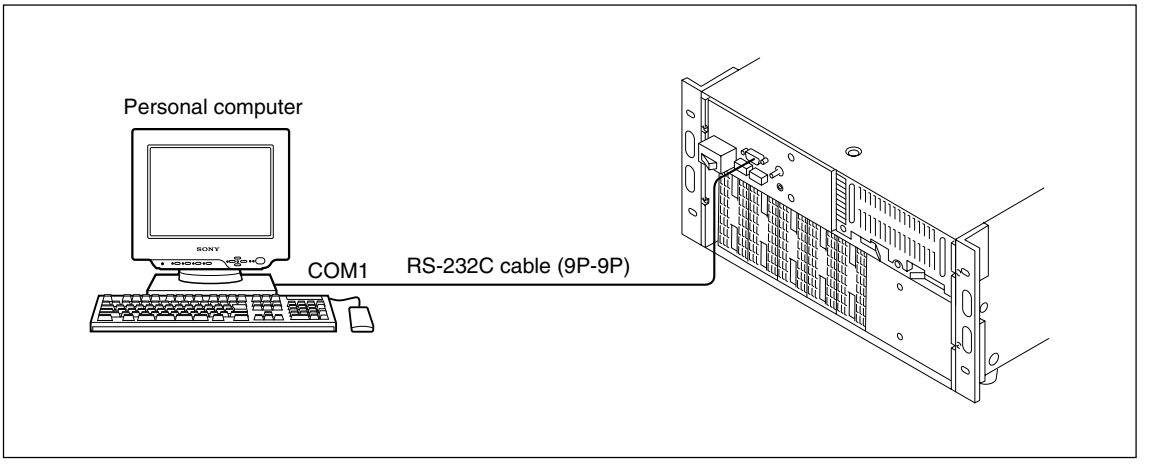
Cable (RS-232C cross cable)

Connector

D-sub 9-pin, Female 1-562-421-11 (Connector)
1-561-749-00 (Juncton shell)



Connection



Setting of communication protocol

Communication port	COM1
Baud rate	38400 bps
Parity	None
Flow control	None
Stop bit length	1 bit
Data bit length	8 bit

3-2. Uploading and Downloading the Contents of Memory (SY-283 board)

This section describes how to upload and download the contents of memories (IC406, IC407, IC414, IC415, IC421, IC422, IC432 and IC433) on the SY-283 board using the FTP function of Ethernet.

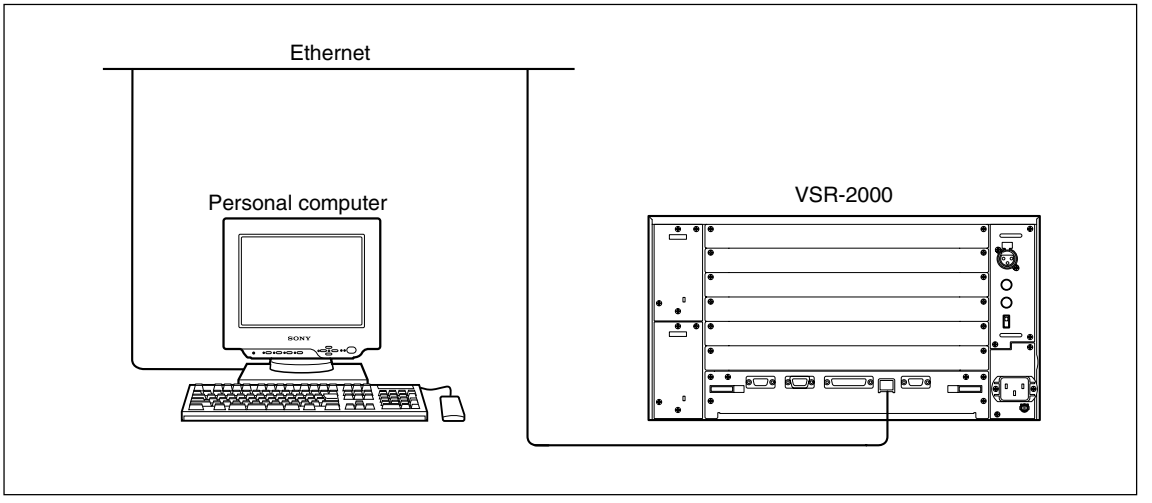
Note

For the display example in using a personal computer, this manual differentiates between the characters displayed on the screen and the characters to be entered as shown below.

Font and style of letters	Display example	Reference for distinction
Times font	UTY>	Automatically displayed message by a program
Helvetica regular (Italic)	*SDC-UTY*	Characters to be entered
Symbols	↵	Enter key
	␣	Space equivalent to a character

Connection

The VSR-2000 and personal computer are connected via Ethernet.



Uploading

Note

The displays shown below are samples for your reference.

1. Log in the VSR-2000 from personal computer. (Enter the IP address of the VSR-2000.)

```
C : ¥> ftp␣xx.xx.xx.xx↵ ←——— IP address
Connected to xx.xx.xx.xx
220 FTP server ready.
```

2. Enter the predetermined user ID and password.

```
User (xx.xx.xx.xx) : videostore↵
331 Password required.
Password : mpegworld↵
230 User name accepted.
```

3. Transfer a file from the VSR-2000 to current directory of personal computer.

```
ftp> get␣_FS↵
200 OK.
150 ready to send file.
226 closing.
4194304 bytes received in 17.02 seconds
(246.43 Kbytes/ sec)
```

4. Log out.

```
ftp> quit↵
221 Goodbye.
```

http://getMANUAL.com

Downloading

Note

The displays shown below are samples for your reference.

1. Log in the VSR-2000 from personal computer. (Enter the IP address of the VSR-2000.)

```
C : ¥> ftp␣xx.xx.xx.xx↵
Connected to xx.xx.xx.xx
220 FTP server ready.
```

2. Enter the predetermined user ID and password.

```
User (xx.xx.xx.xx) : videostore↵
331 Password required.
Password : mpegworld↵
230 User name accepted.
```

3. Transfer a file from current directory of personal computer to the VSR-2000.

```
ftp> put␣_FS↵
200 OK.
150 ready to take file.
226 closing.
4194304 bytes sent in 17.02 seconds
(246.43 Kbytes/ sec)
```

4. Log out.

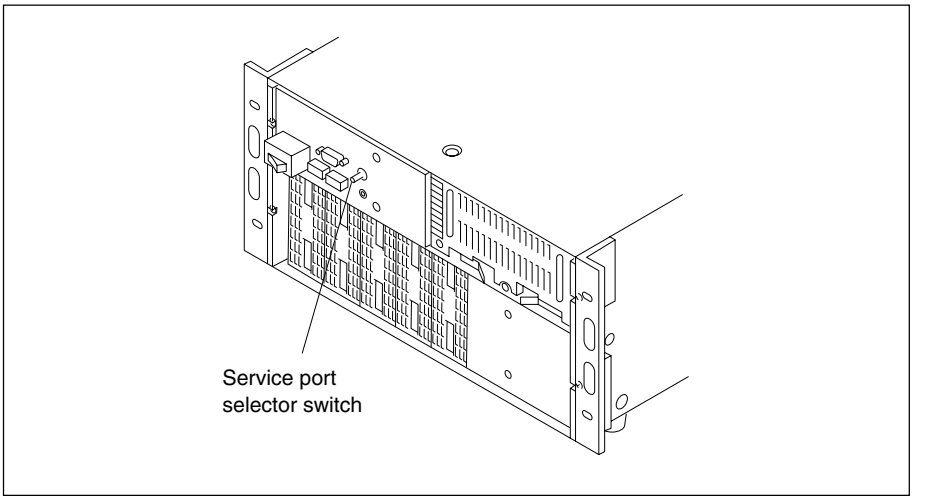
```
ftp> quit↵
221 Goodbye.
```

3-3. Uploading and Downloading the Contents of Memory (PU-113 board)

This section describes how to upload and download the contents of memory (IC301) on the PU-113 board using a macro function of Tera Term.

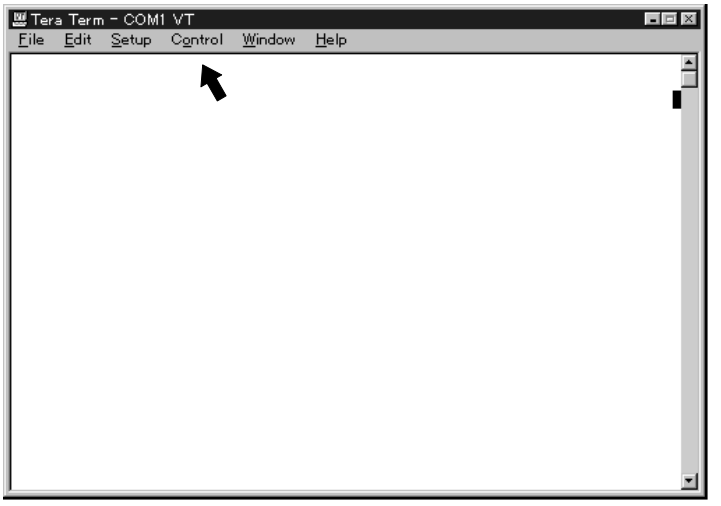
Preparation

1. Remove the front panel. (Refer to Section 4-2-1.)
2. Set the service port selector switch to “E”.
3. Connect the VSR-2000 to a personal computer and set the communication rate. (Refer to Section 3-1.)

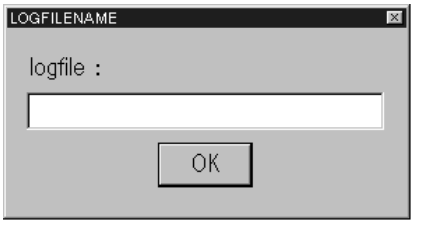


Uploading

1. Activate Tera Term.
2. Select “Control” – “Macro” from the top menu.



3. Activate a “Puget**.ttl” file.
4. Enter the file name.
   (Example : “pudata.log”)



5. A confirmation message is displayed. The screen display stops when uploading is completed. Click the [OK] button.

6. Terminate Tera Term.

Downloading

Note

The error information of HDD has been written in this memory. This unit may not normally operate when incorrect data is downloaded.

1. Activate Tera Term.
2. Select “Control” – “Macro” from the top menu.
3. Activate a “Puput**.ttl” file.
4. Enter the file name.
5. A confirmation message is displayed. The screen display stops when downloading is completed. Click the [OK] button.
6. Terminate Tera Term.

Section 4
Replacement of Main Parts and Boards

4-1. Cautions before Servicing

The hard disk drives (HDD) are installed in the VSR-2000.
The HDD is a precision part. The causes such as shock, vibration and static electricity to the unit, and the conditions of temperature and humidity may damage HDD or its data.
Before servicing, read the following cautions carefully, and perform the servicing with extra care.

Cautions about Shock and Vibration

When transporting and moving
- Pack the unit using the packaging materials specified by the manufacturer. (When transporting the VSR-2000, pack the HDDs separately.)
- Use a proper cart.
- Put a cushion* on the cart.
- Avoid rough routes, and manage the cart gently.

When placing on a floor or table
- Put a cushion* on stable and horizontal place, and put the VSR-2000 on it gently.
- Do not place the unit near vibrating equipment.

For the VSR-2000 and HDD
- Never hit the HDD by a tool, and drop it on the VSR-2000.

Take extra care
- Never give vibration or shock to the HDD during the power on, or within about 30 seconds after turning off the power.
- Be extremely careful when removing and/or installing the HDD unit, fan motor unit or power supply unit while the VSR-2000 is in live state.

*Cushion : Polyethylene foam (density : 38 kg/m^3, surface intrinsic resistance : 10^{11} to 10^{12} Ω, thickness : 50 mm) or equivalent.

Cautions about Removal/Installation of the VSR-2000 from Rack

- Never give shock to all the rack mounted unit which has a HDD.
- Be sure to turn off the power of the rack mounted unit which has a HDD.

Cautions about Static Electricity

- Keep static-producing items such as plastics (air cap and others) away from the working area.
- When deal with the HDD, must be put on the earth-band to establish a ground.

Cautions about Temperature and Humidity

- Temperature and humidity of storage and operating conditions must be kept within the correct specified range.
- Never turn on the power with the cabinet is removed in consideration of the air-cooling effect. When turn on the power without installing the cabinet, it is essential that the unit should be covered with the substitute for the cabinet.

Cautions When an Error Appears in HDD

- Treat the VSR-2000 conform to the above cautions, even when an error appeared.
- Keep the VSR-2000 in the condition in which the error appeared, and write down the details of the error.

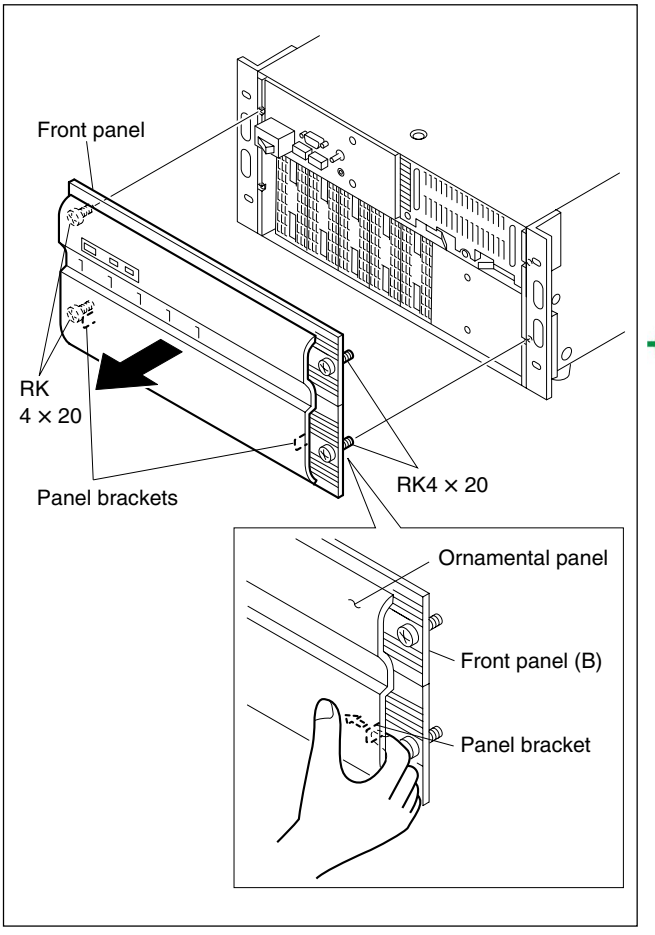
4-2. Removal/Installation of Cabinet

4-2-1. Front Panel Removal/Installation

Note

Be sure to put on the earth-band to establish a ground when removing/installing the front panel during the power on. If not, this may cause malfunction.

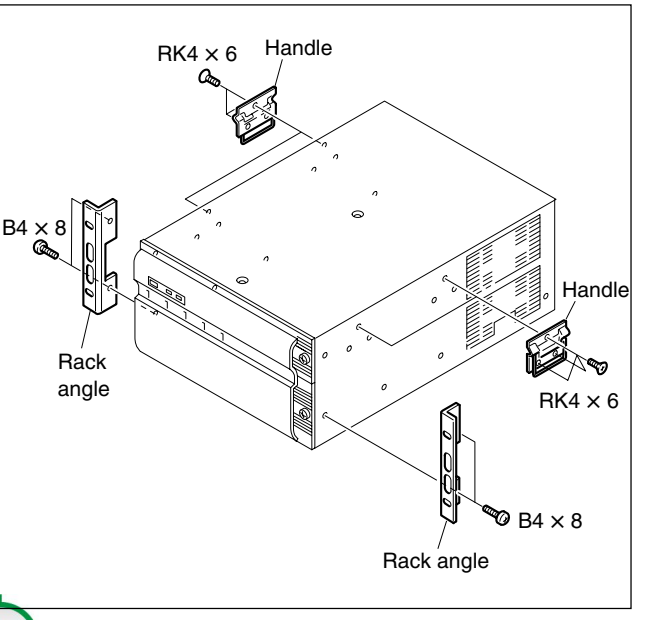
1. Loosen the four screws (with stoppers) on the front panel.
2. Remove the front panel while pushing the panel brackets between the ornamental panel and front panel (B).



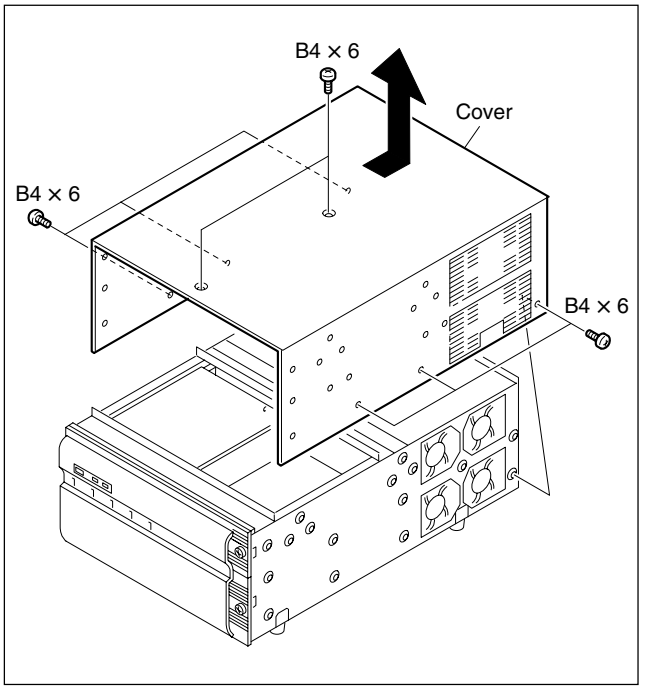
3. For installation, perform the removal procedures in reverse order.

4-2-2. Cover Removal/Installation

1. Remove the four screws (each two screws at the right and left), and remove the rack angles of both sides.
2. Remove the 12 screws (three screws for one handle), and remove all handles of both sides.



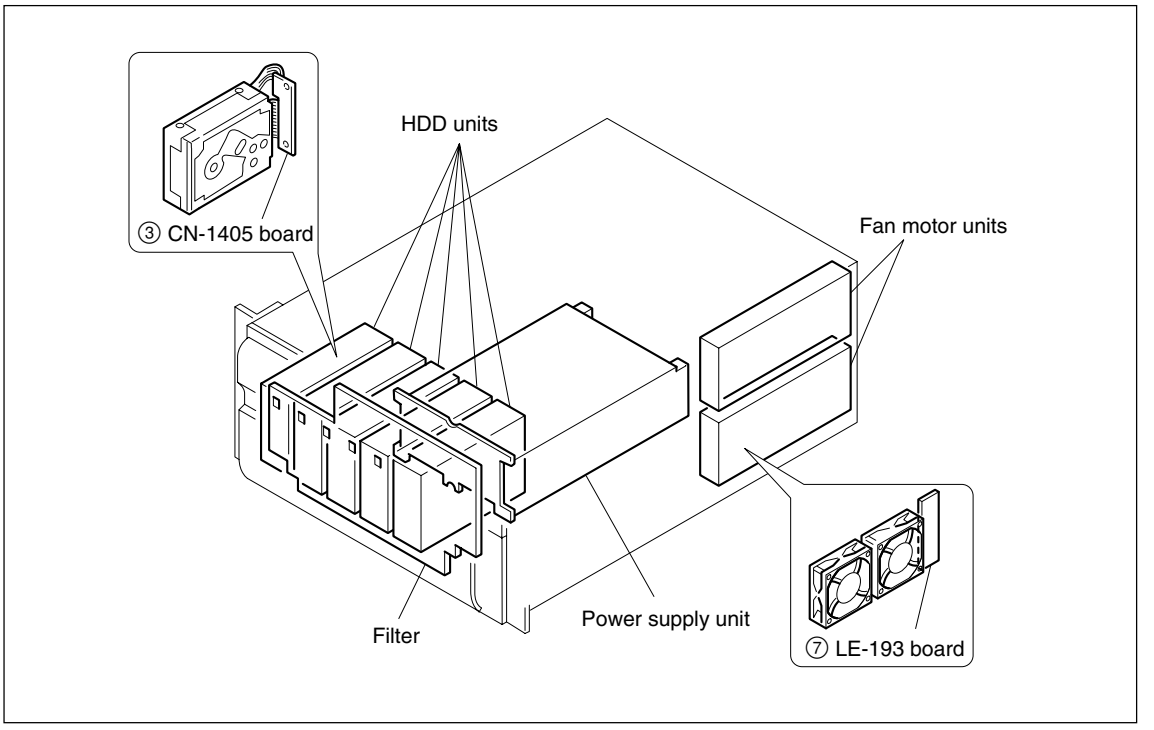
gM3 Remove the eight screws, and remove the cover while winding both sides of the cover.



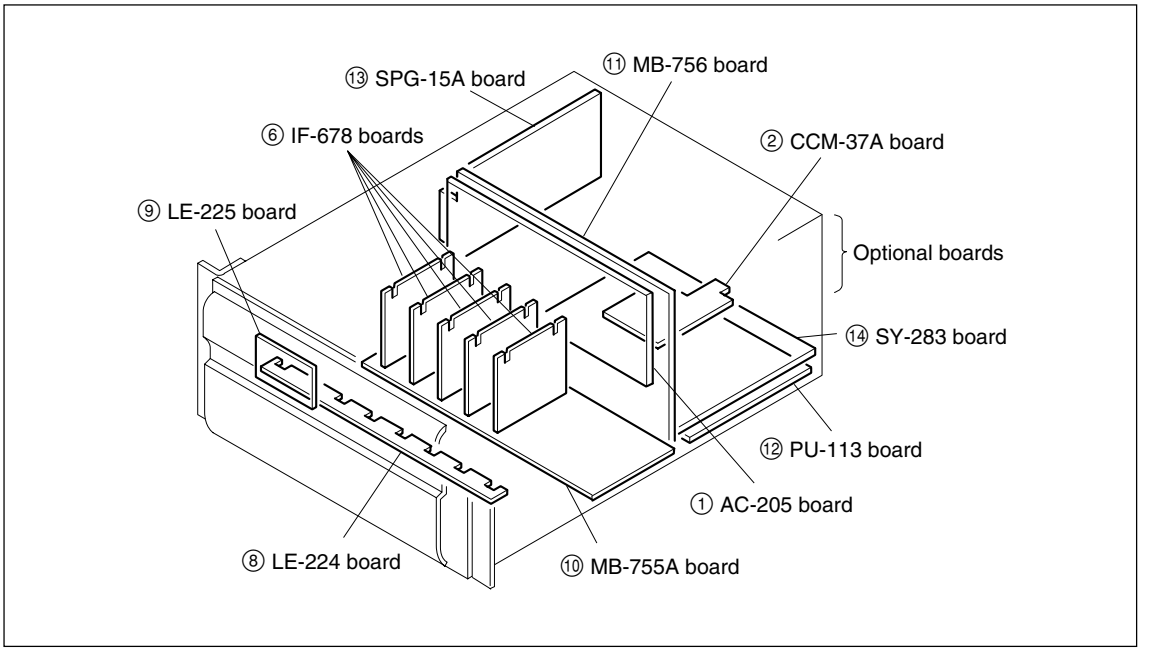
4. For installation, perform the removal procedures in reverse order.

4-3. Location of Main Parts and Boards

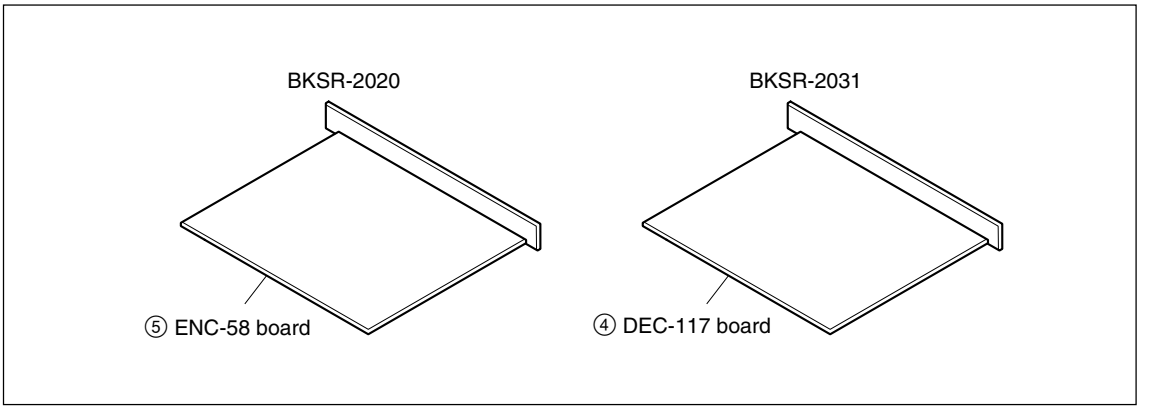
Main parts location



Boards location



Boards (optional boards) location



No.	Board Name	Function
①	AC-205	Power splitting connector
②	CCM-37A	Ethernet control
③	CN-1405	HDD connector
④	DEC-117 (BKSR-2031)	Decoder (MPEG to SDI)
⑤	ENC-58 (BKSR-2020)	Encoder (SDI to MPEG)
⑥	IF-678	HDD interface
⑦	LE-193	Fan unit indicator
⑧	LE-224	HDD access indicator
⑨	LE-225	System reset
⑩	MB-755A	Motherboard for HDD interface
⑪	MB-756	Motherboard
⑫	PU-113	HDD array control
⑬	SPG-15A	Sync generator
⑭	SY-283	System control

4-4. General Information for Parts Replacement

Periodic replacement

It is recommended to replace the parts described in the table below periodically.
And, it is recommended to clean the filters periodically.

Part Name	Recommended Replacement Cycle
Fan motor unit	Five years
Filter of front panel	Same time of the fan motor replacement

Tightening torque

Tighten the screw at the standard tightening torque below when securing the parts.

Screw Size	Standard Tightening Torque
M 2.6	0.5 to 0.6 N•m {5 to 6 kgf•cm}
M 3.0	0.7 to 1.0 N•m {7 to 10 kgf•cm}
M 4.0	1.2 to 1.6 N•m {12 to 16 kgf•cm}

4-5. Power Supply Unit Replacement

Note

Be careful not to give any shock to HDD.

Replacement Part

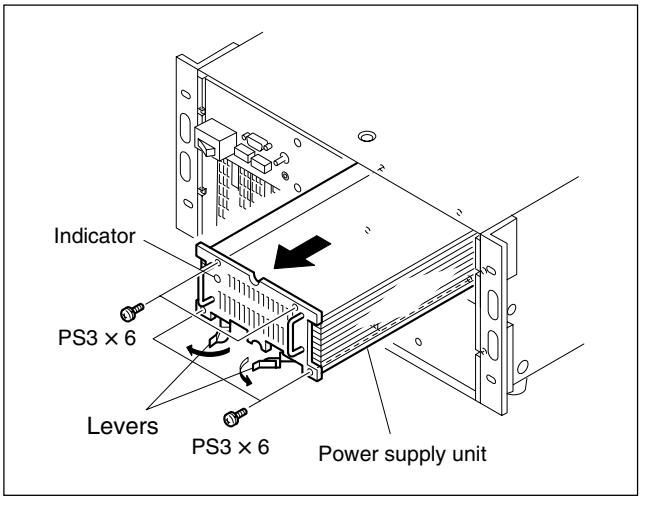
Please order the BKMA-PS70 (Redundant Power Supply Unit).

Note

The parts in a power supply unit cannot be replaced. Be sure to replace the whole power supply unit.

Removal Procedures

1. Remove the front panel. (Refer to Section 4-2-1.)
2. Make sure that indicator of the power supply unit lights off.
3. Turn off the power switch of the power supply unit.
4. Remove the four screws fixing the power supply unit.
5. Pull the levers in the direction shown by the arrows, then grasp the handles and pull out the power supply unit.



Note

When removing the power supply unit for the purpose other than replacement, to prevent contact detects of the power supply unit, do not touch the connector of the removed power supply unit.

Installation Procedures

1. Insert a new power supply unit into the slot and push the power supply unit as far as it will go.
   Note
   Never give a shock to the HDD when inserting the power supply unit.

2. Secure the power supply unit with the four screws.
3. Install the front panel. (Refer to Section 4-2-1.)

CAUTION
Tighten the screws of power supply unit.
If the power supply unit is not secured completely, the contact resistance of the power connector will be increased and may cause parts damage or smoking.

Confirmation After Replacement

1. Turn on the power.
2. Make sure that the POWER indicator lights in green of the ornamental panel.

4-6. HDD Unit Replacement

When the SYSTEM indicator of the front panel flashes in red and the blue indicator of the HDD flashes in spite that the HDD is not accessed (A rebuild request for the HDD is generated.), replace the HDD unit of the corresponding slot.

The HDD unit can be replaced during the power on.

Note
When replacing the HDD unit during the power on, the following precautions should be followed.
- Be sure to put on the earth-band to establish a ground. If not, this may cause malfunction.
- Be careful not to give any shock to another HDD.
- Replace the power supply unit within three minutes in consideration of air cooling effect.

Replacement Part

Please order the BKSH-209G, BKSH-218G or the BKSH-236G.

4-6-1. When using the BZSR-2000 Trial Version Supplied in the VSR-2000

For more details, refer to the Operation Manual of the BZSR-2000.

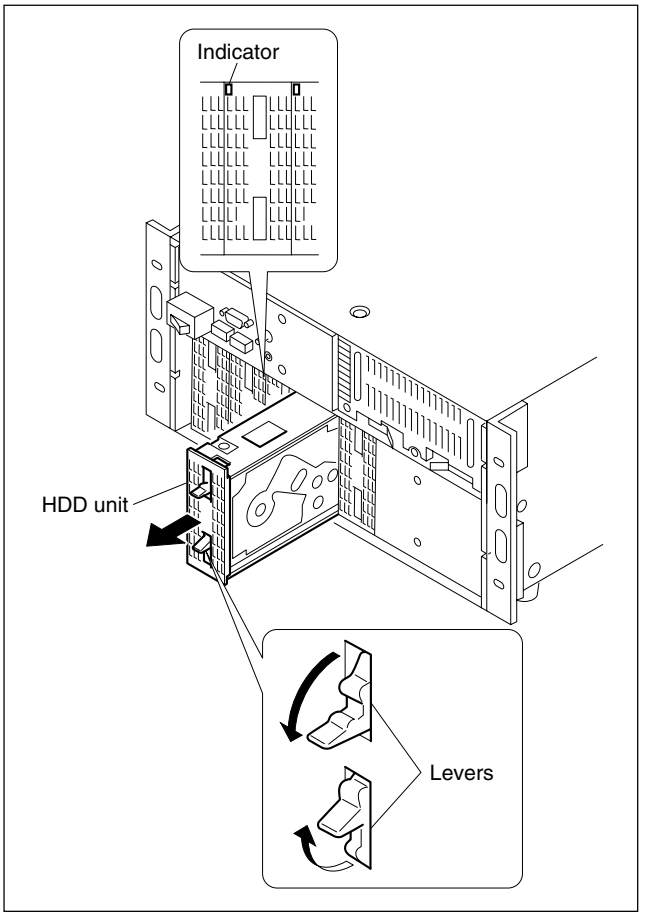
Stopping the HDD

1. Activate the BZSR-2000.
2 Click “Utility”.
3. Click “HDD Hot Swap”.
4. Click the “STOP” button in the “Request” column of the HDD on which “Rebuild” is shown in the “Status” column.
5. Confirm that the HDD stops rotation.
   (The “Rebuild” message in the “Status” column changes to “STOP” and the “STOP” button of the “Request” column changes “START” button. Confirm that the blue indicator on the front HDD stops flashing and changes to turn on.)

http://getMANUAL.com

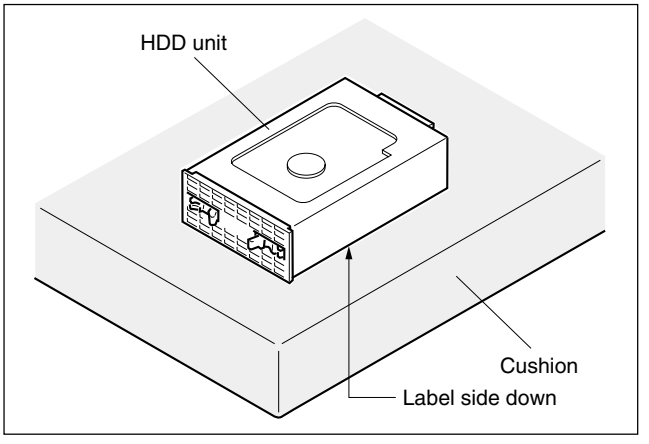
Removal Procedures

1. Remove the front panel. (Refer to the Section 4-2-1.)
2. Make sure that indicator of the HDD unit to be replaced lights on.
3. Remove the HDD unit gently while pressing the levers in the direction of the arrows.



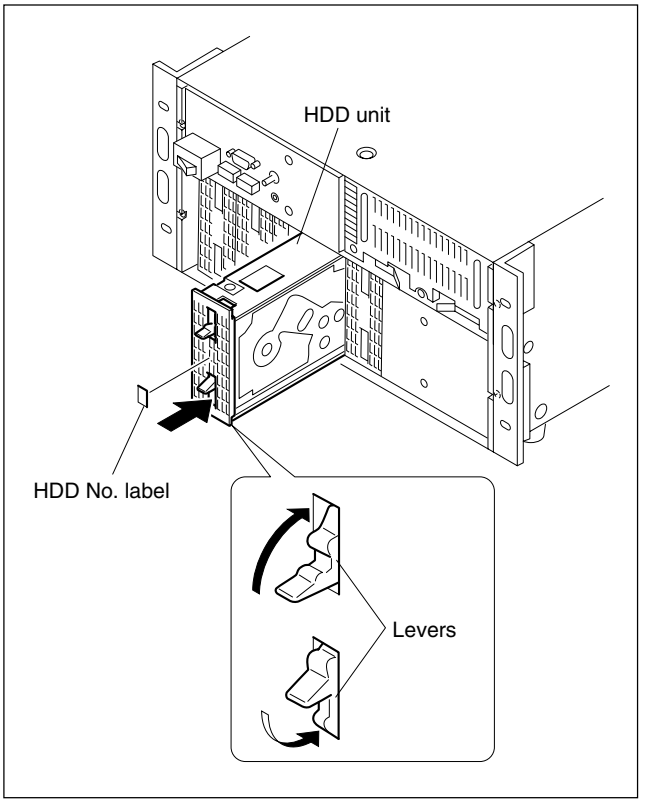
Note

Place the removed HDD unit on the cushion gently with the warranty label side down.



Installation Procedures

1. Insert a new HDD unit into the slot gently, and press the levers in the direction of the arrows to lock the HDD unit.
2. Attach the HDD No.label which has same number as removed HDD to the front of the new HDD unit.
   • HDD No. label : 3-605-401-01



3. Install the front panel. (Refer to Section 4-2-1.)

Starting the HDD

Click the “START” button of the “Request” column.
The HDD will start, and a rebuild operation is automatically executed.

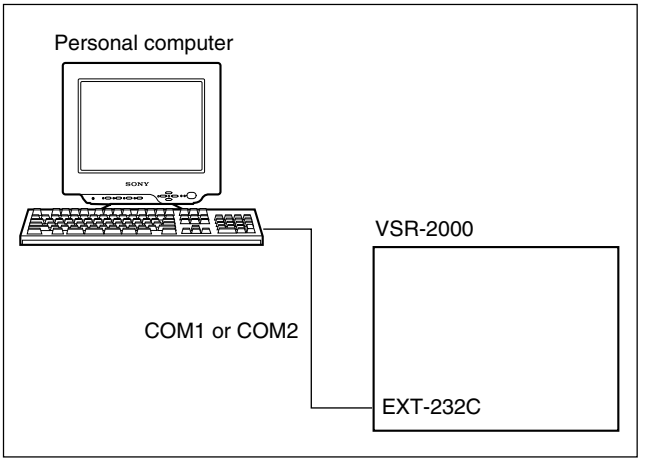
4-6-2. How to Replace the HDD Unit without Stopping Operation of the System When Operated Applications Other Than BZSR-2000

Replace the HDD from the front EXT-232C connector using the terminal software of personal computer.

RS-232C connection

Connect the front EXT-232C connector of the VSR-2000 to a personal computer (COM1 or COM2) using the commercially available RS-232C cross cable (D-sub 9-pin).

Connection



Setting of communication protocol

Communication port	COM1 or COM2
Baud rate	38400 bps
Parity	None
Flow Control	None
Stop bit length	1 bit
Data bit length	8 bit

1. Select [2 : DPC CPU (SY-283)] using the front Service Port selector switch of the VSR-2000.
2. Activate the terminal software of personal computer (HyperTerminal or others in case of Windows) setting as shown above.
3. Press the [ENTER] key and confirm that “DPC>” is displayed on the screen of the terminal software.

Checking the HDD

1. Enter “DISK” and press the [ENTER] key.
2. Confirm that the following message is displayed. (when a rebuild request for HDD of the slot 1 is generated)

```
DPC>DISK
[DiskStatus]
-RebuildRequest : YES   ← (Rebuild request is generated.)
-Rebuilding : NO
-Drive 1 : FAIL         ← (Replace the drive if GOOD
-Drive 2 : GOOD             is not displayed.)
-Drive 3 : GOOD
-Drive 4 : GOOD
-Drive 5 : GOOD
Total Volume=62427M Byte
Remaining Volume=62394 Cluster
```

Stopping the HDD

Note

Select and stop a HDD with extra care. If two or more HDDs are stopped, recording/playback may be disabled. With a rebuild request for HDD has been generated, if other HDD is stopped, recording/playback may be disabled.

1. Enter “STOPHDD1” and press the [ENTER] key. (when the HDD of the slot 1 is replaced)
2. Confirm that the following message is displayed.

```
DPC>STOPHDD 1
STOP DISK 1
```

3. Confirm that the HDD stops.
   (The blue indicator of the corresponding HDD at the front of the VSR-2000 stops flashing and changes to turn on.)

Removal Procedures

Refer to Section 4-6-1.

Installation Procedures

Refer to Section 4-6-1.

Starting the HDD

1. Enter “REBUILD1” and press the [ENTER] key. (when starting the HDD of the slot 1)
2. Confirm that the following message is displayed.

```
DPC>REBUILD 1
Start DISK 1        ← (Starts up the HDD of the slot 1.)
```

Confirming the Startup of the HDD

1. Enter “DISK” and press the [ENTER] key.
2. Confirm that the following message is displayed.

```
DPC>DISK
[Disk Status]
-Rebuild Request : NO
-Rebuilding : YES          ← (during rebuilding)
-Drive 1 : Rebuilding      ← (The HDD of the slot 1
-Drive 2 : GOOD               is rebuilding.)
-Drive 3 : GOOD
-Drive 4 : GOOD
-Drive 5 : GOOD
Total Volume=62427M Byte
Remaining Volume=62394 Cluster
```

4-7. Fan Motor Replacement

When the SYSTEM indicator of the front panel flashes in red and the indicator of the fan motor unit flashes or turns off, replace the corresponding fan motor unit.

The fan motor unit can be replaced during the power on.

4-7-1. Checking the Defective Fan Motor Unit

When Using the BZSR-2000 Trial Version Supplied in the VSR-2000

For more details, refer to the Operation Manual of the BZSR-2000.

1. Start up the BZSR-2000.
2. When the fan is abnormal, a fan error icon of the hardware error icon appears on the top left of the menu screen.
3. Confirm the fan motor unit whose indicator flashes or lights off and replace it.

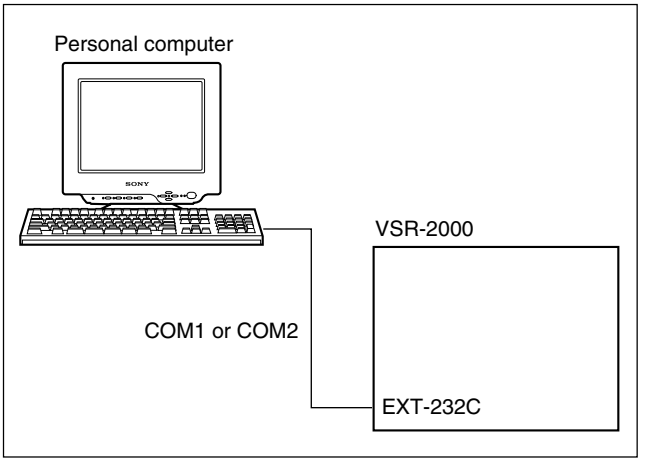
How to Check the Fan Motor Unit without Stopping Operation of the System When Operated Applications Other Than BZSR-2000

Check the fan motor unit from the front EXT-232C connector using the terminal software of personal computer.

RS-232C connection

Connect the front EXT-232C connector of the VSR-2000 to a personal computer (COM1 or COM2) using the RS-232C cross cable (D-sub 9-pin) available commercially.

Connection



Setting of communication protocol

Communication port	COM1 or COM2
Baud rate	38400 bps
Parity	None
Flow Control	None
Stop bit length	1 bit
Data bit length	8 bit

1. Select [2 : DPC CPU (SY-283)] using the front Service Port selector switch of the VSR-2000.
2. Activate the terminal software of personal computer (HyperTerminal or others in case of Windows) setting as shown above.
3. Press the ENTER key and confirm that "DPC>" is displayed on the screen of the terminal software.

Checking the FAN Status

1. Enter "SYSTEM" and press the ENTER key.
2. Confirm that the following message is displayed.

```
DPC>SYSTEM
[System Status]
-Video Mode=PAL
-Serial No=012345
-date : 07/23/1999 10:18:42:05
-IP Address=127:0:0:1
-Net Mask=255:0:0:0
-Default Gateway=0:0:0:0
-Clock=Internal
-FAN Lower-Rear : OK
-FAN Lower-Front : OK
-FAN Upper-Rear : OK
-FAN Upper-Front : FAIL   ← (The front fan of the
-Power : OK                  upper fan motor unit
-Reference : Internal        is defective.)
-Battery OK
-Temp OK
-VTR : Offline
```

4-7-2. Fan Motor Unit Replacement

It is recommended to replace the fan motor unit periodically. The fan motor unit can be replaced during the power on.

Note

When replacing the fan motor unit during the power on, the following precautions should be followed.

- Be sure to put on the earth-band to establish a ground. If not, this may cause malfunction.
- Be careful not to give any shock to HDD.
- Replace the power supply unit within one minute in consideration of air cooling effect.

Replacement Part

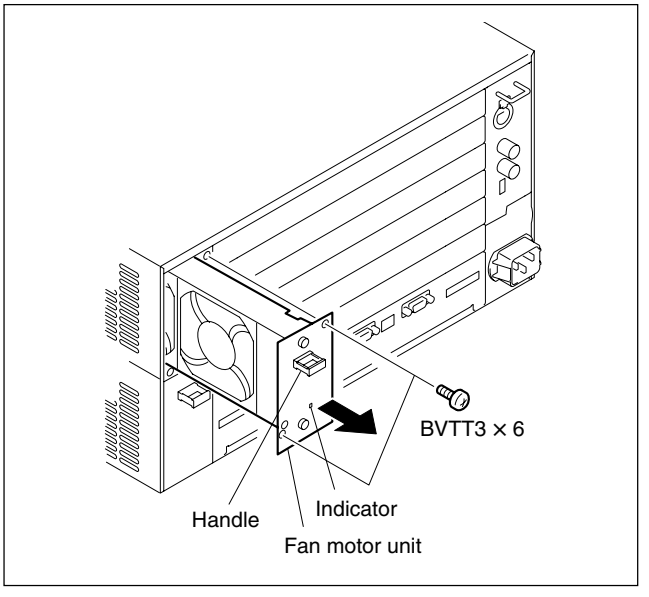
Fan assembly : A-8320-041-A

Removal Procedures

1. Make sure that indicator of the fan motor unit to be replaced lights off.
2. Remove the two screws, grasp the handle and pull out the fan motor unit.

   Note

   Touching the rotating fan may cause injury.
   Replace the fan motor with extra care in a live state of the unit.



Installation procedures

1. Insert a new fan motor unit into the slot and push the fan motor unit as far as it will go.
2. Secure the fan motor unit with the two screws.

Confirmation After Replacement

1. Make sure that indicator of a new fan motor unit lights in green.
2. Make sure that all of the four fans rotate properly. (Only when possible)
3. Make sure that the status of the EXT-232C that is described in the previous section “checking the fan status” step, shows “OK”.

4-7-3. Fan Motor Replacement

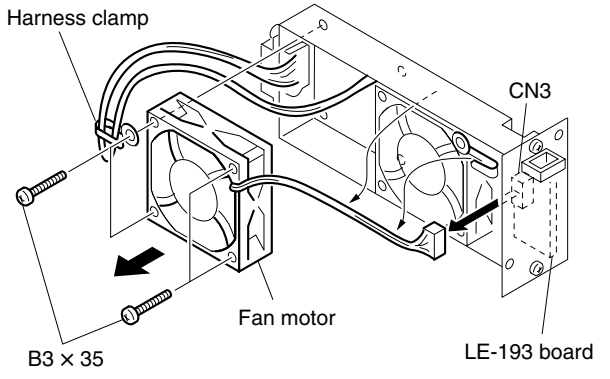
Replacement Part

Fan motor : 1-763-175-11

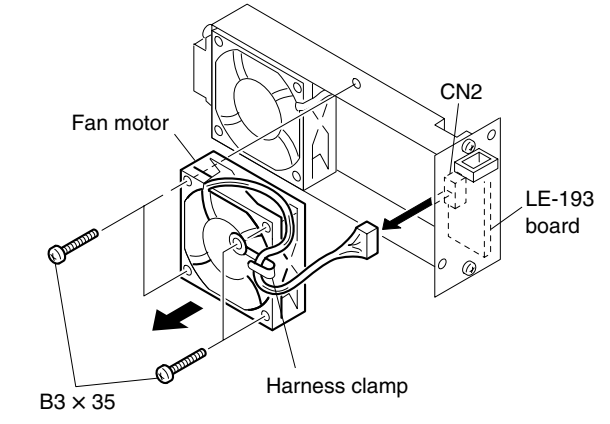
Removal Procedures

1. Turn the power off.
2. Remove the fan motor unit. (Refer to Section 4-7-2.)
3. Loosen the harness clamper.
4. Remove the four screws, and remove the fan motor. At this time, the harness clamper is removed with the fan motor.
5. Disconnect the connector on the LE-193 board.
   - Fan (1) : CN3
   - Fan (2) : CN2

< To remove the fan (1) >

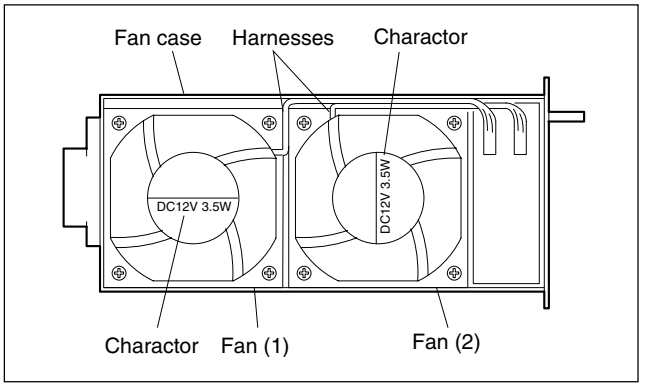


< To remove the fan (2) >



Installation Procedures

1. Put a new fan motor into the fan case positioning each as shown in the figure.



2. Connect the connector on the LE-193 board.
   - Fan (1) : CN3
   - Fan (2) : CN2
3. Tuck the harness into the fan case so that the harness does not stick out of the fan case.
4. Tighten the four screws with the harness clamper.
5. When fan (2) is installed, fix the harness with the harness clamper.
6. Install the fan motor unit. (Refer to Section 4-7-2.)

Confirmation After Replacement

1. Turn the power on.
2. Make sure that indicator of the fan motor unit lights in green.
3. Make sure that all of the four fans rotate properly. (Only when possible)

4-8. Filter Replacement

A filter is installed in the VSR-2000 on the back of the front panel.
When dust is accumulated on the filter, ventilation is prevented and inside of the unit will be overheated. This may cause the malfunction.
It is recommended to replace the filter at the same time of fan motor replacement.

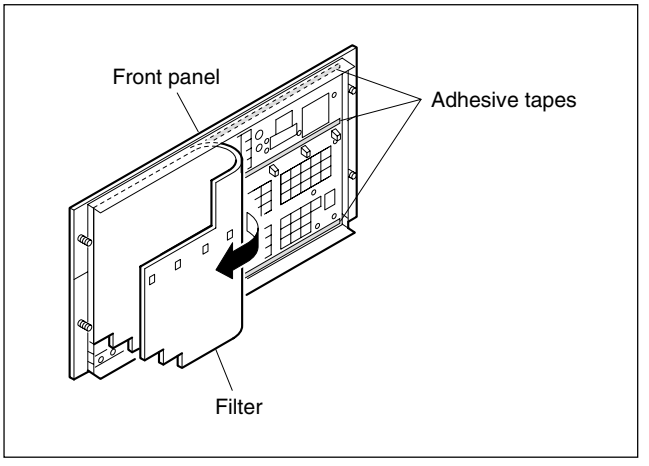
4-8-1. Filter on the Front Panel Replacement

Replacement Part

Front filter : 3-622-887-01

Removal Procedures

1. Remove the front panel. (Refer to Section 4-2-1.)
2. Peel the filter away from the tape.



Installation Procedures

1. Fasten a new filter to the tape.
2. Install the front panel. (Refer to Section 4-2-1.)

Setting After Replacement

It is not necessary to set after filter replacement.

4-9. Backup Battery Replacement

WARNING

Observe the following cautions. If not, bursting, ignition, and heating may occur in the battery.

- Do not charge, short, disassemble, deform, and heat the battery or put it in a fire.
- Replace the battery with the same type one or one specified by the manufacturer.
- Attach a tape to the plus + and minus − terminals for insulation so that they do not touch other metals or batteries when throwing the battery away.

CAUTION

Observe the following caution. If not, bursting and liquid leakage may occur in the battery.

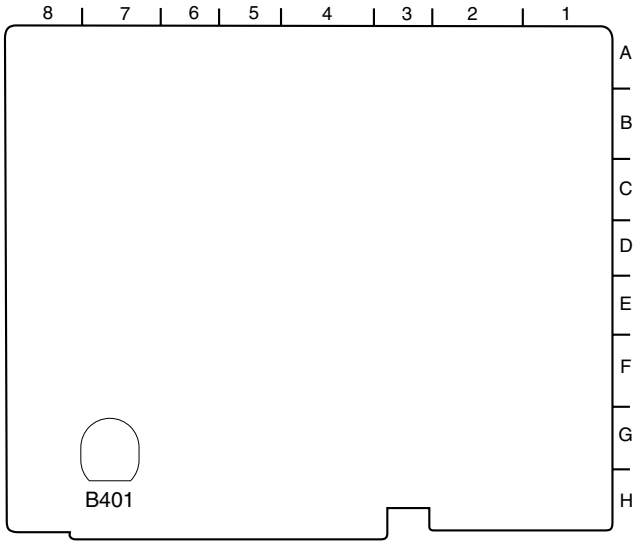
- Set the polarity + of the battery toward the polarity + printing on the board.

The SY-283 board and PU-113 board of the VSR-2000 have lithium batteries for data backup.

Board Name	Ref.No.	Item	Battery-backed IC	Stored data	Recommended Replacement Cycle*1
SY-283	B401	CR2025	IC406, 407, 414, 415, 421, 422, 432, 433	Database of file	Three years
	B302	M4T28-BR12SH1	IC302	Various setting parameters of the boards	Ten years
PU-113	B301	M4Z28-BR00SH1	IC301	Error information of HDD	Ten years

*1 : The batteries of the VSR-2000 are not consumed during the power to the board turned on.
Therefore, this replacement cycle of the battery indicates the period at which the power to the board is not turned on.

4-9-1. B401 (CR2025) on the SY-283 Board Replacement



Note

The battery B401 (CR2025) backs up the database of file. Replace this battery within 24 hours after the SY-283 board is pulled out from the slot.
If 24 hours or more have passed, the backup data will be lost.

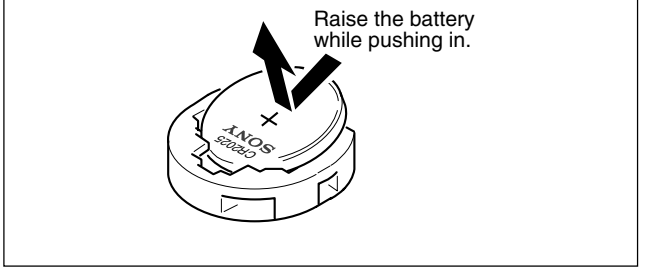
Replacement Part

Obtain a commercial lithium battery.

Part name :	Lithium battery	
Specifications :	Model	CR2025
	Voltage	3 V
	Capacity	120 mAH

Removal Procedures

1. Remove the SY-283 board. (Refer to Section 4-10-8.)
2. Remove the battery.



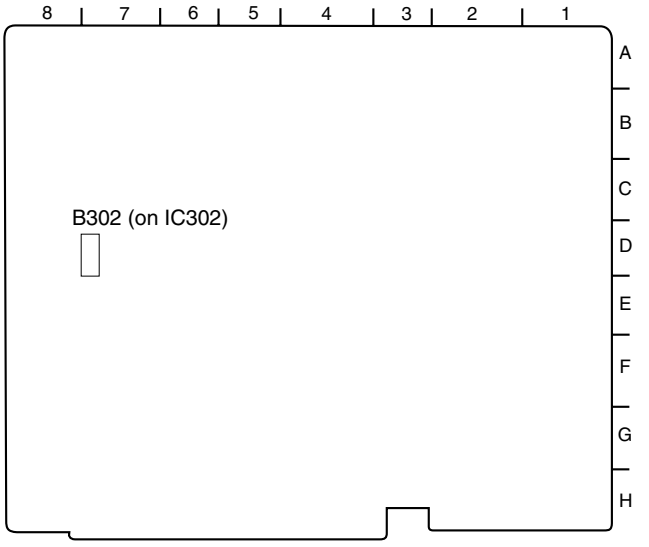
Installation Procedures

1. Install a new battery on the SY-283 board.
   At this time, put the lithium battery with the "+" terminal side up.
2. Insert the SY-283 board in its original slot.

Setting After Replacement

It is not necessary to set after battery replacement.

4-9-2. B302 (M4T28-BR12SH1) on the SY-283 Board Replacement



Note

The battery B302 (M4T28-BR12SH1) backs up the various setting parameters of the menus. This data is lost at the time when the battery is removed.

Input/output parameter information of the inserted board

(The parameters that can be set on the control protocols such as NTSC/PAL, bit rate, video/audio input/output switching, audio level setting, IP address, etc.)
Before replacing the battery, write down the setting parameter information of the boards.

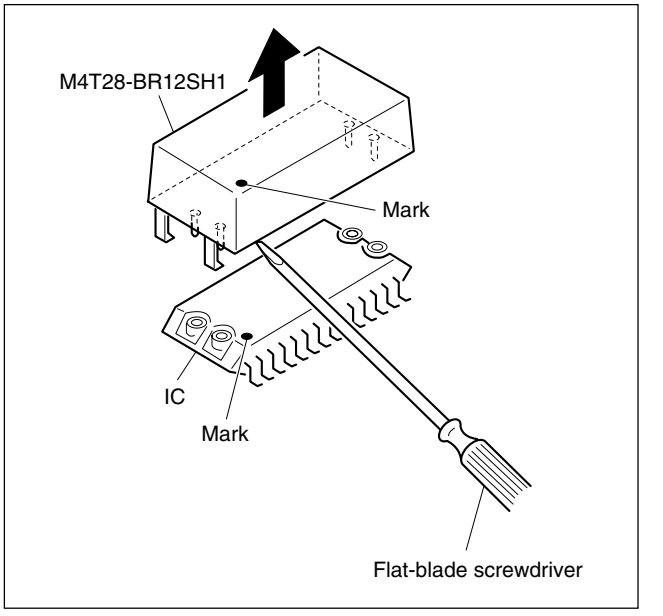
After replacements, set the parameters again from the menu screen of the application software.

Replacement Part

Part name : Lithium battery with built-in crystal oscillator
Part number : 1-767-156-11

Removal Procedures

1. Remove the SY-283 board. (Refer to Section 4-10-8.)
2. Insert a tip of a flat-blade screwdriver between IC and battery to remove the battery.



Installation Procedures

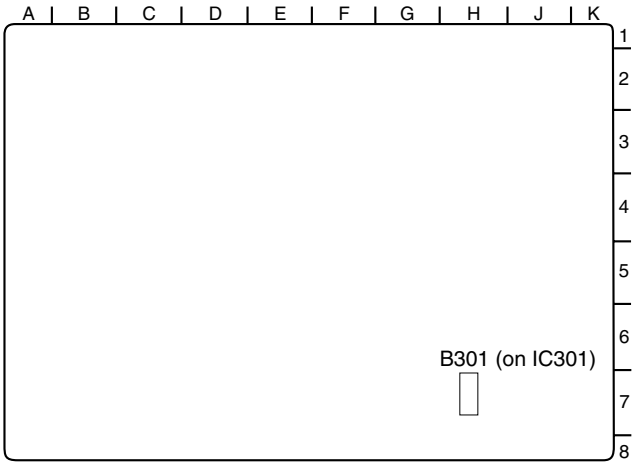
1. Align a new battery with the mark of IC, and insert it.
2. Install the SY-283 board in its original slot.

Setting After Replacement

Download and re-set again the parameter information of the boards from the application software.

http://getMANUAL.com

4-9-3. B301 (M4Z28-BR00SH1) on the PU-113 Board Replacement



Note

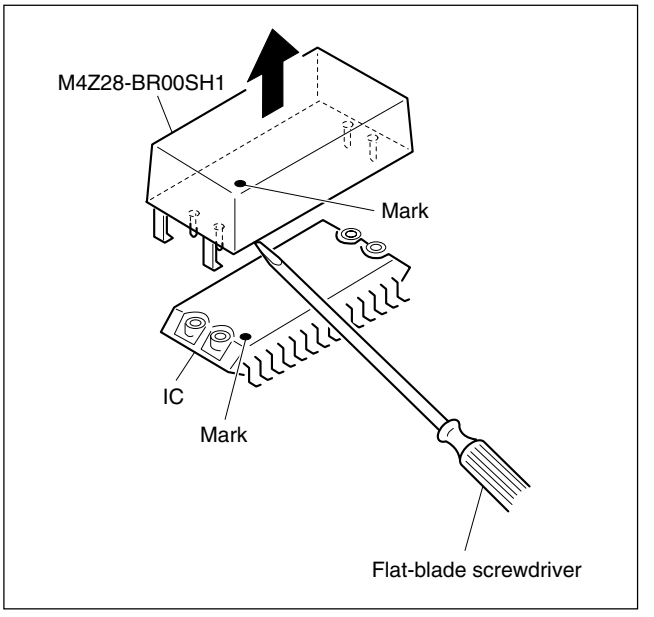
The battery B301 (M4Z28-BR00SH1) backs up error information of HDD.
This data is lost at the time when the battery is removed. Before replacing the battery, store the error information of HDD in a personal computer. (For the backup, refer to "3-3. Uploading and Downloading the Contents of Memory (PU-113 board)".)
If error information is lost, video/audio noise may be caused when an error containing file is played back.

Replacement Part

Part name : Mold-type lithium battery
Part number : 1-528-749-11

Removal Procedures

1. Store the error information of HDD in a personal computer. (For the backup, refer to "3-3. Uploading and Downloading the Contents of Memory (PU-113 board)".)
2. Remove the PU-113 board. (Refer to Section 4-10-9.)
3. Insert a tip of a flat-blade screwdriver between IC and battery to remove the battery.



Installation Procedures

1. Align a new battery with the mark of IC, and insert it.
2. Install the PU-113 board in its original slot.

Setting After Replacement

Download the stored error information of HDD from the personal computer. (For the downloading, refer to "3-3. Uploading and Downloading the Contents of Memory (PU-113 board)".)

4-10. Boards Replacement

Product Service

The following optional boards are supplied with a product.

Optional Board	Product
ENC-58	BKSR-2020
DEC-117	BKSR-2031

Standard Tightening Torque

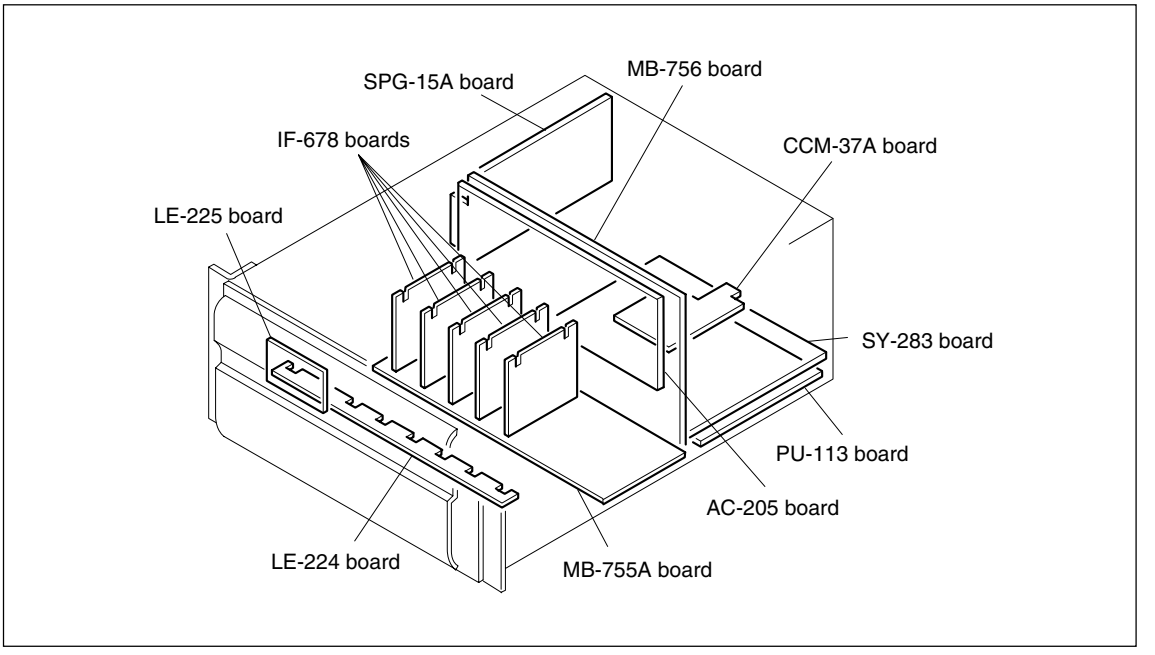
When tightening the screws, torque the screws to the following value.

Screw Size	Standard Tightening Torque
M2.6	0.5 to 0.6 N•m {5 to 6 kgf•cm}
M3.0	0.7 to 1.0 N•m {7 to 10 kgf•cm}
M4.0	1.2 to 1.6 N•m {12 to 16 kgf•cm}

Boards Replacement

This section describes the boards replacement as follows. After the board is replaced, set the switches on the board referring to the installation manuals.

Model	Boards	Section
VSR-2000	AC-205	4-10-6
	CCM-37A	4-10-8
	CN-1405	4-10-1
	IF-678	4-10-2
	LE-225	4-10-3
	MB-755A	4-10-5
	MB-756	4-10-7
	PU-113	4-10-9
	SY-283	4-10-8

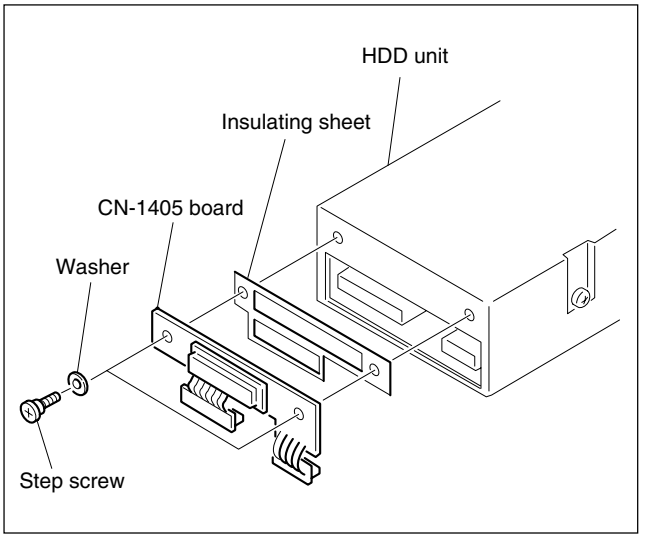


4-10-1. CN-1405 Board

Note

When the CN-1405 board is replaced, be sure to put on an earth-band to establish a ground.

1. Disconnect the power cords.
2. Remove the front panel. (Refer to Section 4-2-1.)
3. Remove the HDD unit and put it on the cushion gently. (Refer to Section 4-6.)
4. Remove the two connectors of the harness connected to the HDD gently.
5. Remove the two screws and CN-1405 board.



6. Replace the CN-1405 board and perform the removal procedures in reverse order.

Note

When the CN-1405 board is installed, use the torque driver as shown below to avoid the shock to the HDD.

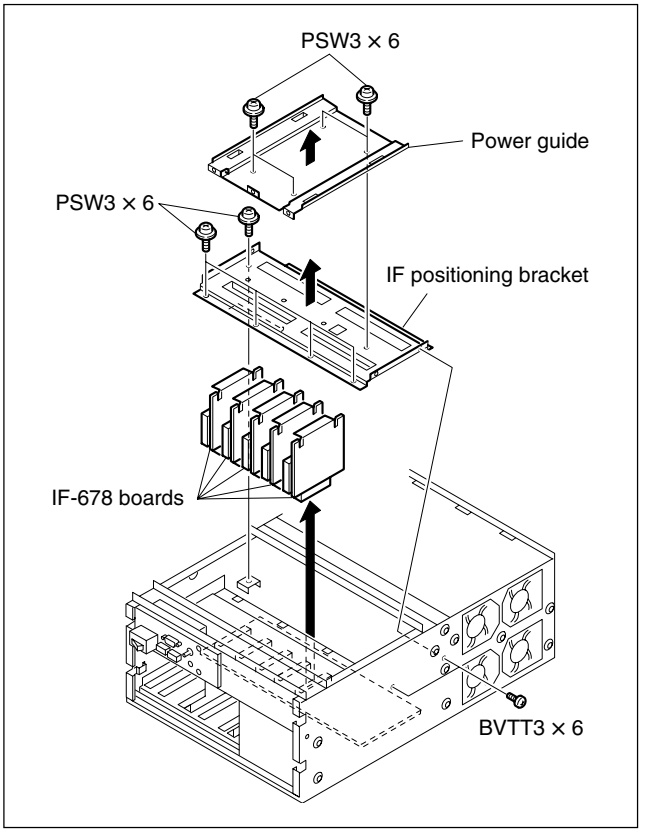
Shockless torque screwdriver
1.2 N•m {12 kgf•cm} : J-6530-070-A

4-10-2. IF-678 Board

1. Disconnect the power cords.
2. Remove the front panel. (Refer to Section 4-2-1.)
3. Remove the cover. (Refer to Section 4-2-2.)
4. Remove all the power supply units. (Refer to Section 4-5.)
5. Remove all the HDD units. (Refer to Section 4-6.)
6. Remove the four screws (PSW3 × 6) and the power guide.
7. Remove the five screws (PSW3 × 6) and two screws (BVTT3 × 6), then remove the IF positioning bracket.
8. Remove and replace the IF-678 board.

   Note

   The IF-678 boards correspond to each HDD unit.



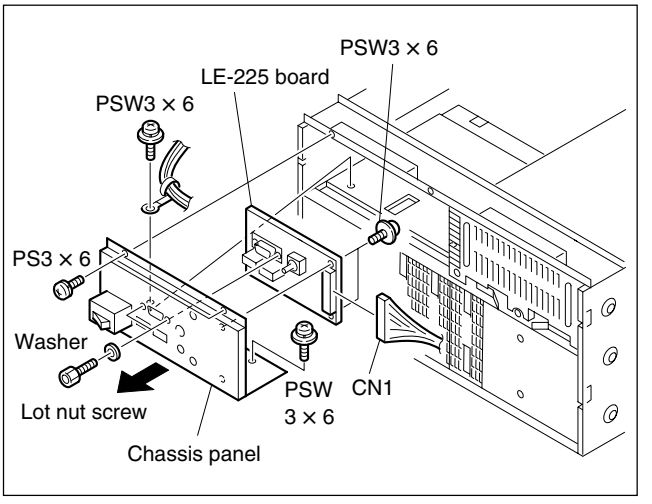
9. For installation, perform the removal procedures in reverse order.

4-10-3. LE-225 Board

1. Disconnect the power cords.
2. Remove the front panel. (Refer to Section 4-2-1.)
3. Remove the cover. (Refer to Section 4-2-2.)
4. Remove the two screws (PSW3 × 6), and the two screws (PS3 × 6), and remove the chassis panel in the direction of the arrow.
5. Remove the two screws supplied and the two screws (PSW3 × 6) and LE-225 board from the chassis panel.
6. Disconnect the connector (CN1) of the harness connected to the LE-225 board.

Note

Be careful not to lose the washer of the lot nut screw.



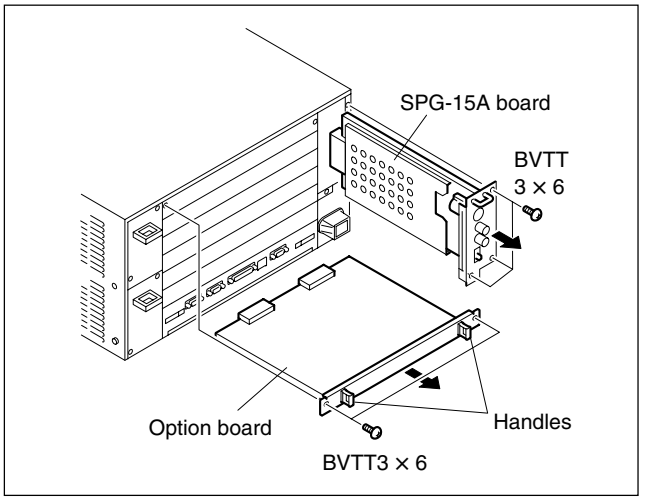
7. For installation, perform the removal procedures in reverse order.

4-10-4. MB Board Assembly

Note

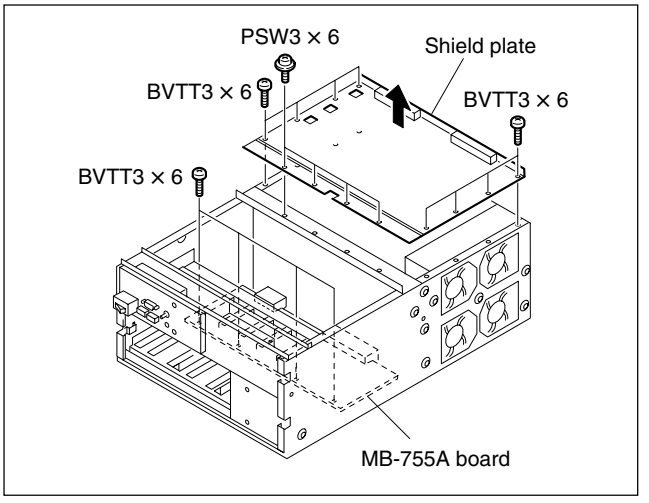
It is necessary that removing the MB board assembly, before the AC-205, MB-755A and MB-756 boards are removed.

1. Disconnect the power cords.
2. Remove the cover. (Refer to Section 4-2-2.)
3. Remove the screws (BVTT3 × 6) on the optional boards, then remove the all optional boards.
4. Remove the four screws (BVTT3 × 6) and SPG-15A board.

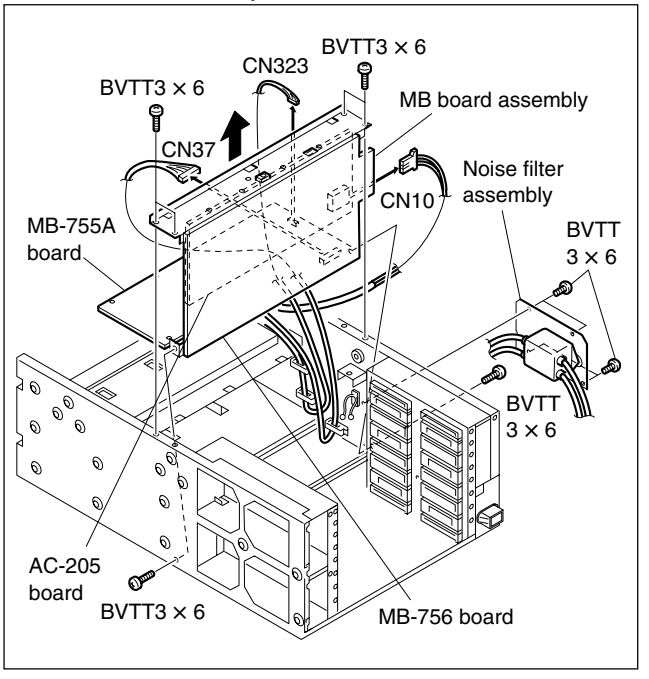


5. Remove the SY-283 board. (Refer to Section 4-10-8.)
6. Remove the PU-113 board. (Refer to Section 4-10-9.)
7. Remove the fan motor unit. (Refer to Section 4-7-2.)
8. Remove the front panel. (Refer to Section 4-2-1.)
9. Remove the power supply unit. (Refer to Section 4-5.)
10. Remove the all HDD units. (Refer to Section 4-6.)
11. Remove the power guide. (Refer to Section 4-10-2.)
12. Remove the IF positioning bracket. (Refer to Section 4-10-2.)
13. Remove and replace the all IF-678 board. (Refer to Section 4-10-2.)

14. Remove the four screws (PSW3 × 6) and eight screws (BVTT3 × 6), then remove the shield plate.
15. Remove the four screws (BVTT3 × 6) securing the MB-755A board.

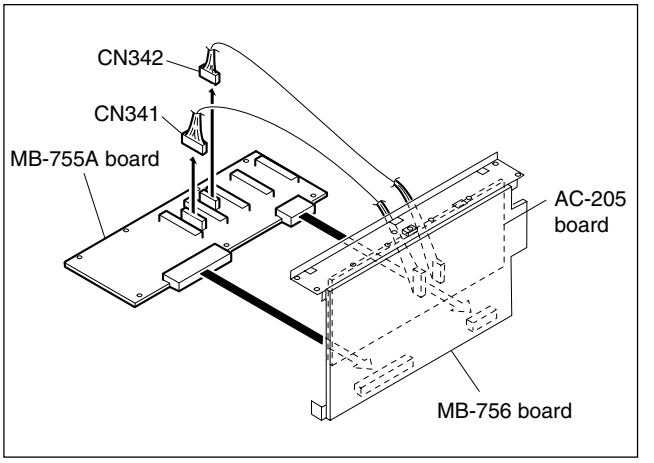


16. Disconnect the connector (CN10) of the harness connected the AC-205 board.
17. Disconnect the connector (CN37) of the harness connected the MB-756 board.
18. Disconnect the connector (CN323) of the harness connected the MB-755A board.
19. Remove the four screws (BVTT3 × 6) and remove the noise filter assembly.
20. Remove the six screws (BVTT3 × 6), then remove the MB board assembly in the direction of the arrow.



4-10-5. MB-755A Board

1. Remove the MB board assembly. (Refer to Section 4-10-4.)
2. Disconnect the connectors (CN341, CN342) of the harnesses connected to MB-755A board.
3. Remove the MB-755A board from the MB-756 board.



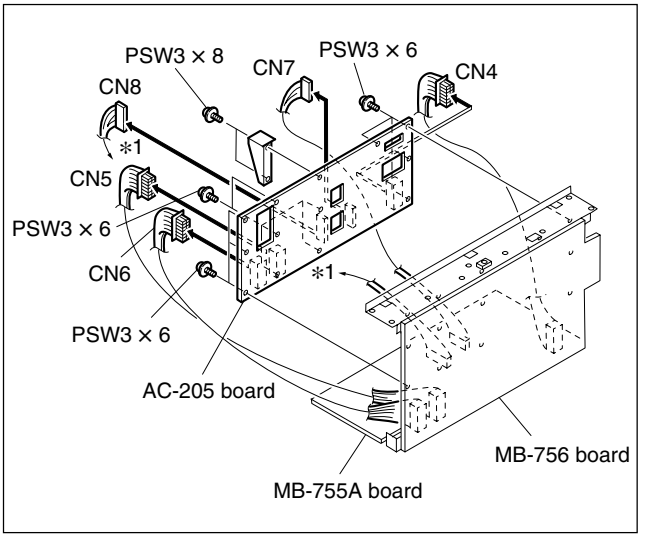
4. Replace the MB-755A board and perform the removal procedures in reverse order.

Note

When the MB-755A board is connected to the MB-756 board, be sure to connect an edge on each connector securely.

4-10-6. AC-205 Board

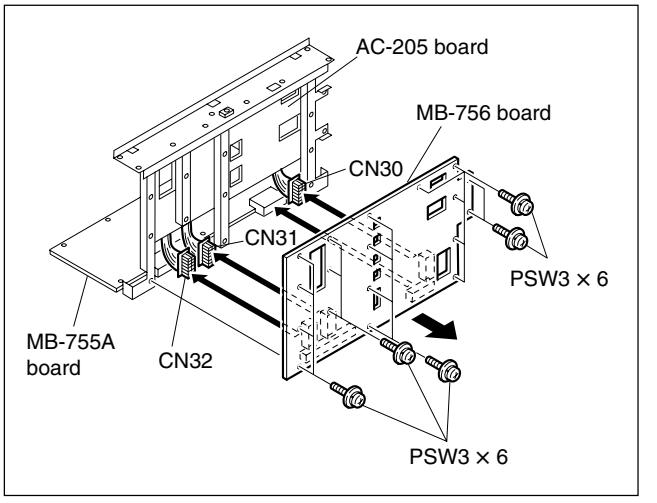
1. Remove the MB board assembly. (Refer to Section 4-10-4.)
2. Remove the connectors (CN4 to CN8) of the harnesses connected to the AC-205 board.
3. Remove the three screws (PSW3 × 8) and 12 screws (PSW3 × 6), then remove the AC-205 board.



4. Replace the AC-205 board and perform the removal procedures in reverse order.

4-10-7. MB-756 Board

1. Remove the MB board assembly. (Refer to Section 4-10-4.)
2. Remove the connectors (CN30 to CN32) of the harness connected to the MB-756 board.
3. Remove the 18 screws (PSW3 × 6) and the MB-755A board from the MB-756 board.



4. Replace the MB-756 board and perform the removal procedures in reverse order.

Note

When the MB-756 board is connected to the MB-755A board, be sure to connect an edge on each connector securely.

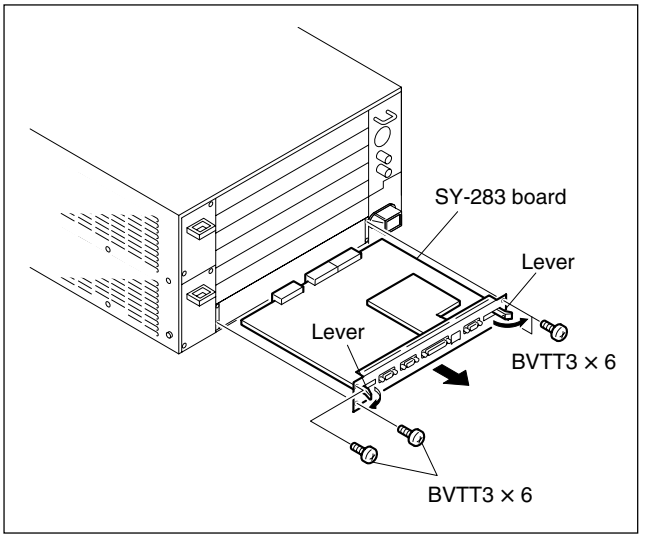
4-10-8. SY-283/CCM-37A Boards

Notes

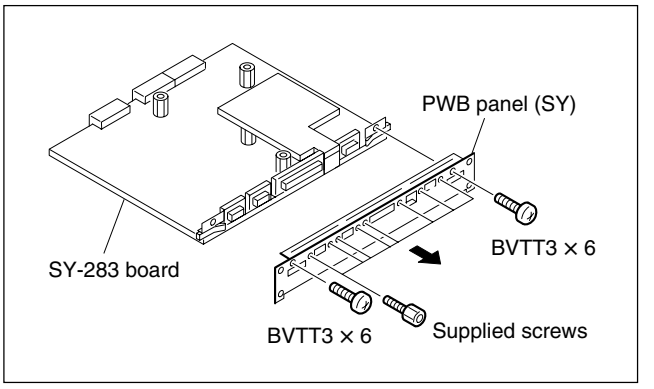
When the SY-283 board is replaced, it is necessary that the following settings are performed.

- Data upload/download
- Input/output parameter information of the boards
  When the CCM-37A board is replaced, it is necessary that the Ethernet address setting is performed.

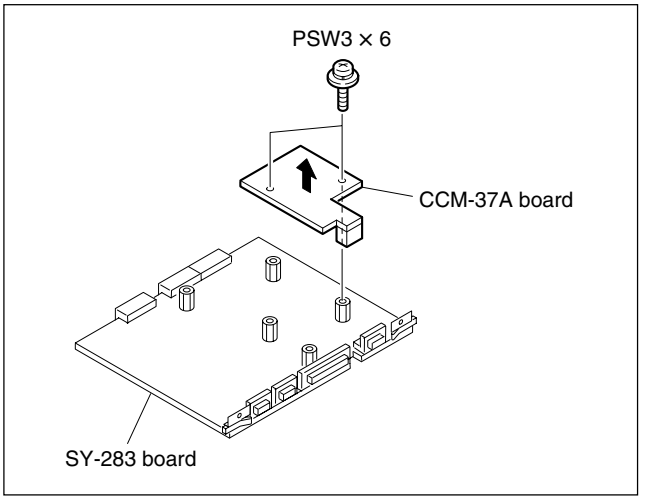
1. Upload the file data before the SY-283 board is replaced. (Refer to Section 3-2.)
2. Disconnect the power cords.
3. Remove the four screws.
4. Turn the board levers, pull out the SY-283 board



5. Remove the two screws (BVTT3 × 6) and the eight screws supplied of the connector, and remove the PWB panel (SY).



6. Remove the two screws and CCM-37A board from the SY-283 board.



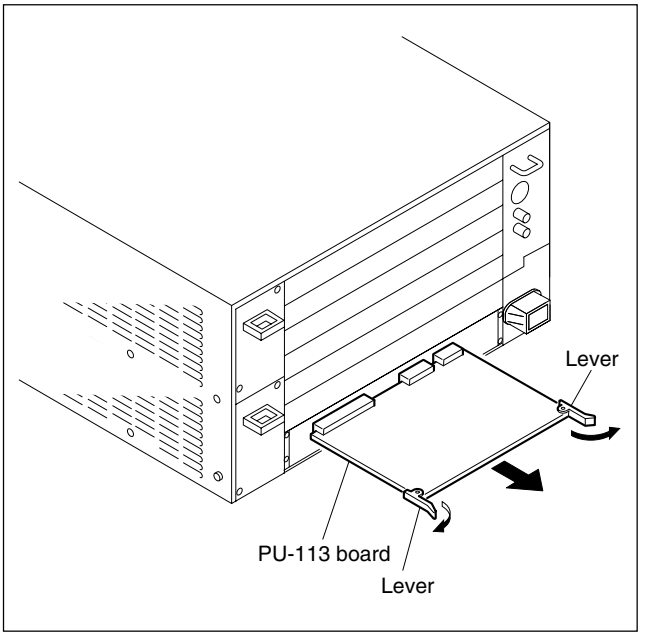
7. For installation, perform the removal procedures in reverse order.
8. Download the file data. (Refer to Section 3-2.)
9. Download and re-set again the input/output parameter information of the inserted board from the application software.
   (The parameters that can be set on the control protocol such as NTSC/PAL, bit rate, video/audio input/output switching, audio level setting, IP address, etc.)
10. Set the Ethernet address.

4-10-9. PU-113 Board

Note

When the PU-113 board is replaced, it is necessary that the data uploading and downloading.

1. Upload the file data before the PU-113 board is replaced. (Refer to Section 3-3.)
2. Disconnect the power cords.
3. Remove the SY-283 board. (Refer to Section 4-10-8.)
4. Turn the board levers in the direction of the arrows and pull out the PU-113 board.



5. For installation, perform the removal procedures in reverse order.
6. Download the file data. (Refer to Section 3-3.)

Section 5
Electrical Alignment

5-1. General Information for Electrical Adjustment

5-1-1. Equipment Required

Tools

- Extension board EX-647 assembly A-8321-004-A (For SPG-15A board)
- Extension board EX-648 assembly A-8321-005-A (For PU-113 board)
- Extension board EX-649 assembly A-8321-006-A (For SY-283 and option board)

Measurement equipment

- Oscilloscope Tektronix 2446B or the equivalent
- NTSC signal generator Tektronix 1410 or the equivalent
  Tektronix TSG-170A or the equivalent
  Tektronix TSG-130A or the equivalent
- PAL signal generator Tektronix 1411 or the equivalent
  Tektronix TSG-271 or the equivalent
  Tektronix TSG-131 or the equivalent
- Audio oscillator Tektronix SG-5010 or the equivalent
- NTSC waveform/vector monitor
  Tektronix 1750A or the equivalent
- PAL waveform/vector monitor
  Tektronix 1751A or the equivalent
- Frequency counter Advantest TR5821AK or the equivalent
- Personal computer IBM-PC compatible computer (installed with Windows 95 or Windows 98)
- Composite picture monitor

5-1-2. Content of Nonvolatile Memory

The VSR-2000 incorporates the nonvolatile memory and the memory backed up by a battery. Perform the operation below during board replacement and memory replacement.

CCM-37A board

IC105 (EEPROM)

Contents :	Ethernet address
Operation after board replacement :	Setting the Ethernet address
Operation after IC105 replacement :	Setting the Ethernet address

DEC-117 board (BKSR-2031)

IC903 (EEPROM)

Contents :	Setting information of video phase and subcarrier phase	
	Video phase :	Phase adjustment of video out for input REF video
	Subcarrier phase :	Subcarrier phase adjustment of video out for input REF video
Operation after board replacement :	Video phase :	Resetting is required. (Refer to Section 5-3-3. “System Phase Adjustment”.)
	Subcarrier phase :	Resetting is required. (Refer to Section 5-3-4. “Subcarrier Phase Adjustment”.)
Operation after IC903 replacement :	Video phase :	Resetting is required. (Refer to Section 5-3-3. “System Phase Adjustment”.)
	Subcarrier phase :	Resetting is required. (Refer to Section 5-3-4. “Subcarrier Phase Adjustment”.)

PU-113 board

IC134 (EEPROM)

Contents :	HDD information
Caution during board replacement :	The contents of memory are erased during board replacement. For more information, consult a Sony sales person.
Caution during IC134 replacement :	The contents of memory are erased during IC134 replacement. For more information, consult a Sony sales person.

IC301 (Backed up by a lithium battery (B301).)

Contents :	HDD error information
Caution during board replacement :	The contents of memory are erased during board replacement. For more information, consult a Sony sales person.
Caution during IC301 replacement :	The contents of memory are erased during IC301 replacement. For more information, consult a Sony sales person.

SY-283 board

IC302 (Backed up by a lithium battery (B302).)

Contents :	Parameter setting information of input board (bit rate, audio out channel, etc.)
Operation after board replacement :	Application software setting
Operation after IC302 replacement :	Application software setting

IC314 (EEPROM)

Contents :	Parameter setting information of input board (bit rate, audio out channel, etc.)
Operation after board replacement :	Application software setting
Operation after IC314 replacement :	Application software setting

IC406, IC407, IC414, IC415, IC421, IC422, IC432, and IC433 (Backed up by a lithium battery (B401).)

Contents :	File database
Operation before board replacement :	Data uploading (Refer to Section 3-2.)
Operation after board replacement :	Data downloading (Refer to Section 3-2.)
Caution during IC replacement :	The contents of memory are erased during replacement. For more information, consult a Sony sales person.

DEC-122/128 board (BKSR-2030)

IC903 (EEPROM)

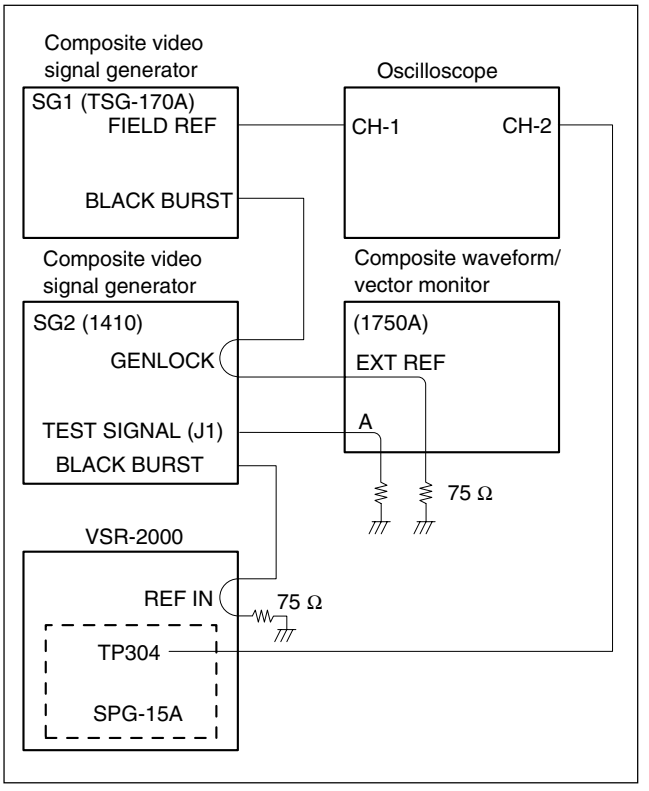
Contents :	Setting information of video phase	
	Video phase :	Phase adjustment of video out for input REF video
Operation after board replacement :	Video phase :	Resetting is required. (Refer to Section 5-5-2. “System Phase Adjustment”.)
Operation after IC903 replacement :	Video phase :	Resetting is required. (Refer to Section 5-5-2. “System Phase Adjustment”.)

http://getMANUAL.com

5-2. SPG-15A Board Adjustment

5-2-1. NTSC SCH Adjustment

Connection



Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “NTSC”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- ⊘RV301 (F-1)/SPG-15A → counterclockwise (↺) fully

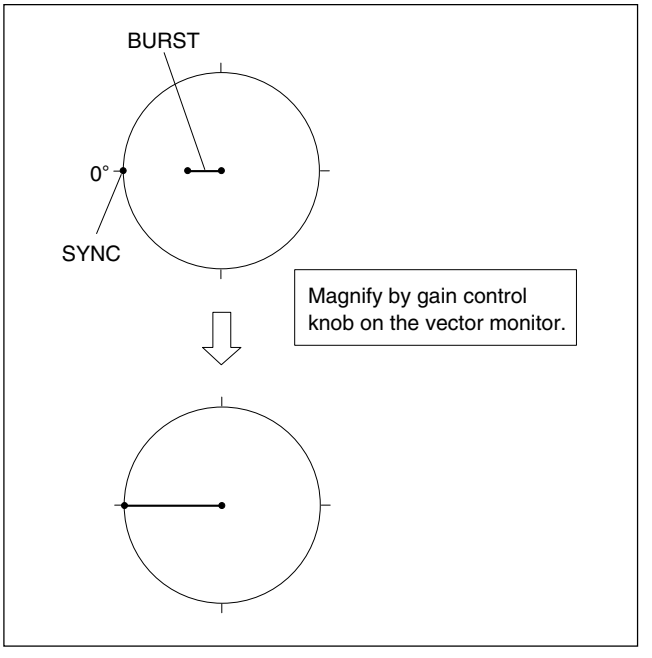
Adjustment Procedures

1. Set the equipment.
   - Vector monitor :
     SCH mode, INPUT : CH-A, EXT REF
   - Signal generator SG2 (1410) :
     SYNCHRONIZATION : GEN LOCK
2. Align the SYNC phase to 0° with the PHASE knob of the vector monitor.

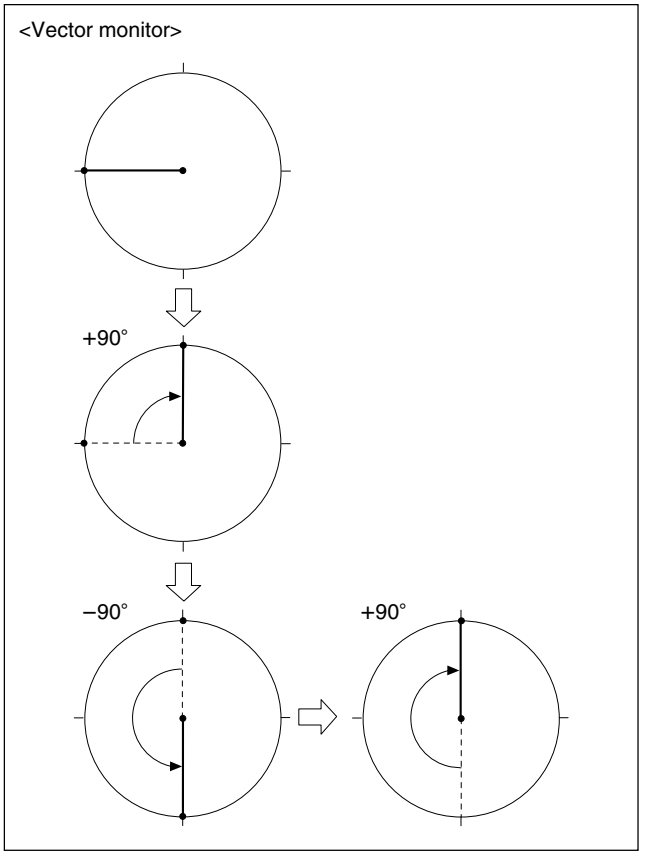
   Note

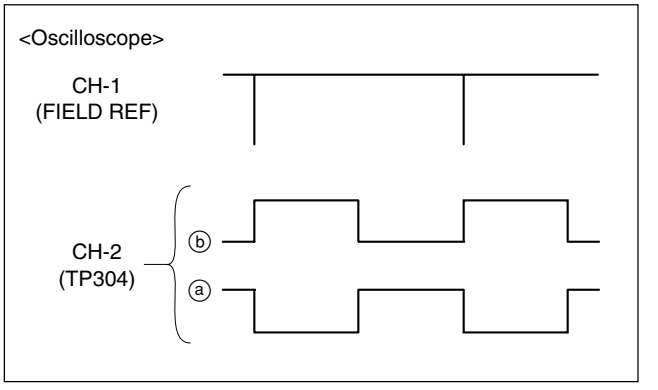
   Turn the knob so that the beam spot moves in the shortest route.

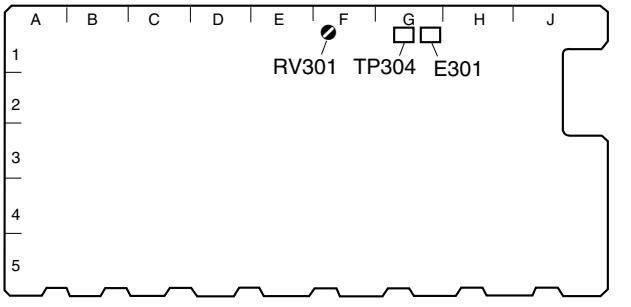
3. Align the BURST to reference position on the vector monitor with the SC PHASE knob of the signal generator SG2.
4. Align the beam spot of BURST to the circle scale on the vector monitor with the gain control knob on the vector monitor.



5. Set the oscilloscope.
   - VOLTS/DIV : DC 2V/DIV (CH-1, CH-2)
   - SEC/DIV : 10 ms/DIV
   - TRIG : CH-1
6. Connect the CH-2 prove of the oscilloscope to TP304 (G-1)/SPG-15A, and prove's GND to E301 (G-1)/ SPG-15A.
7. Align the burst phase to +90° with the SC PHASE knob of the signal generator SG2 clockwise (↻) slowly.
8. Turn ⊘RV301 (F-1)/SPG-15A clockwise (↻) slowly until the waveform of the oscilloscope's CH-2 changes from ⓑ to ⓐ. (Immediately before changing from ⓑ to ⓐ.)
9. Align the burst phase to −90° with the SC PHASE knob of the signal generator SG2 counterclockwise (↺) slowly. Make sure that the waveform of the oscilloscope's CH-2 is ⓑ during the SC PHASE knob turning.
10. Align the burst phase to +90° with the SC PHASE knob of the signal generator SG2 clockwise (↻) slowly. Make sure that the waveform of the oscilloscope's CH-2 is ⓑ during the SC PHASE knob turning.
11. If the specification is not met in step 9 or step 10, re-adjust from step 7.
12. Re-align the burst phase to reference position with the SC PHASE knob of the signal generator SG2 counterclockwise (↺) slowly.



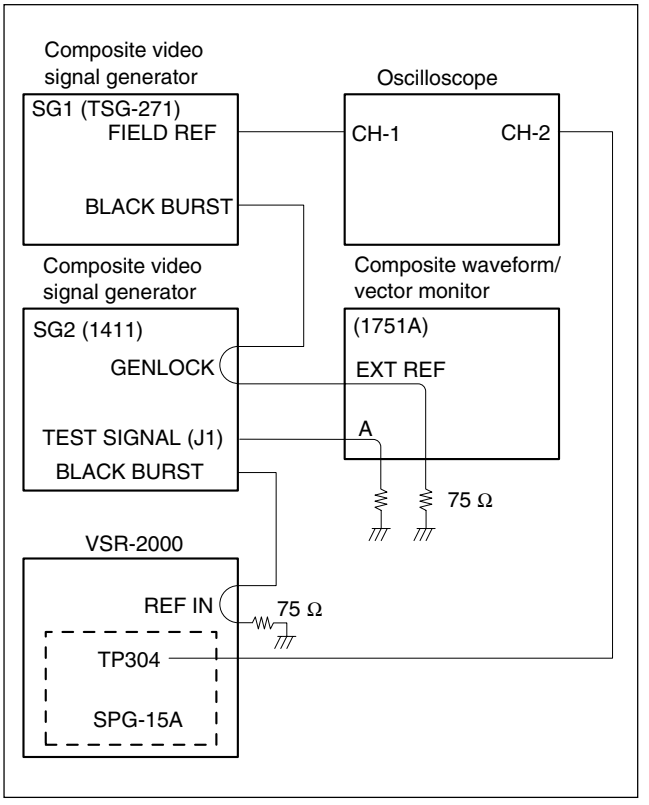




SPG-15A board (A side)

5-2-2. PAL SCH Adjustment

Connection

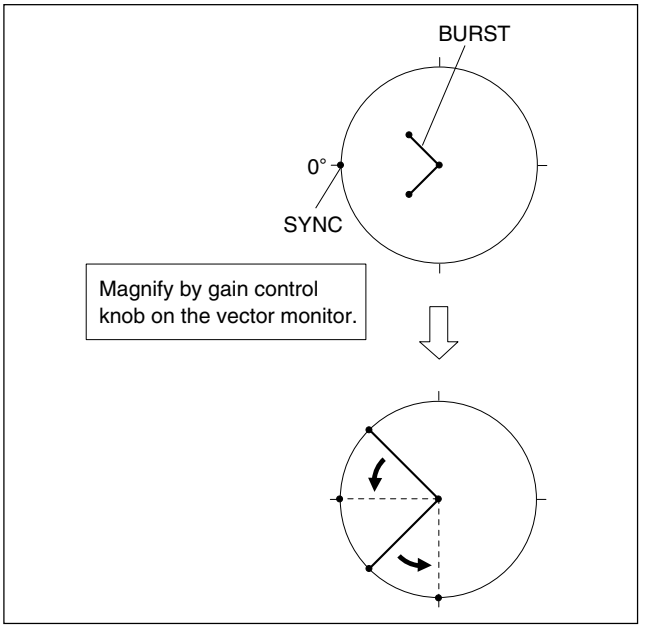


Preparation

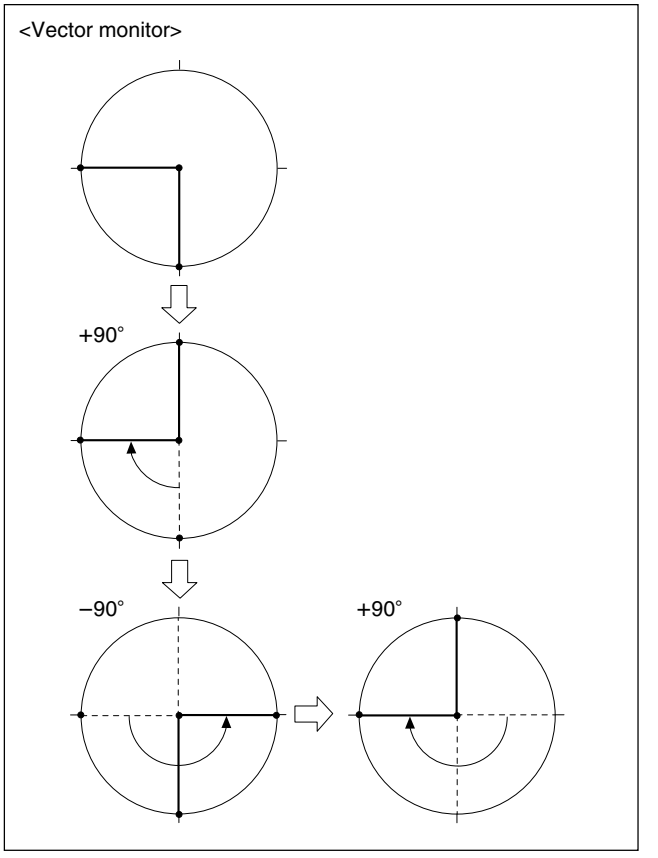
- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “PAL”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- ⊘RV302 (G-1)/SPG-15A → counterclockwise (↺) fully

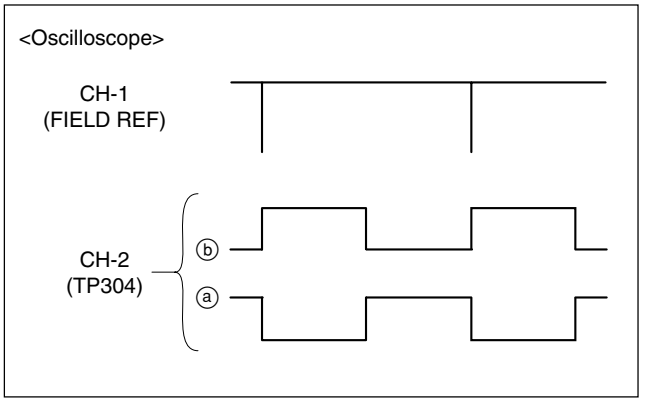
Adjustment Procedures

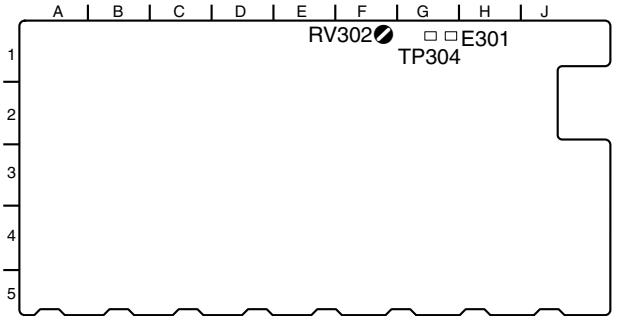
1. Set the equipment.
   - Vector monitor :
     SCH mode, INPUT : CH-A, EXT REF
   - Signal generator SG2 (1411) :
     SYNCHRONIZATION : GEN LOCK
2. Align the SYNC phase to 0° with the PHASE knob of the vector monitor.
   Note
   Turn the knob so that the beam spot moves in the shortest route.
3. Align the BURST to reference position on the vector monitor with the SC PHASE knob of the signal generator SG2.
4. Align the beam spot of BURST to the circle scale on the vector monitor with the gain control knob on the vector monitor.
5. Align the BURST to the specification positions as the dotted lines shown in the figure with the PHASE knob of the vector monitor.



6. Set the oscilloscope.
   - VOLTS/DIV : DC 2V/DIV (CH-1, CH-2)
   - SEC/DIV : 20 ms/DIV
   - TRIG : CH-1
7. Connect the CH-2 prove of the oscilloscope to TP304 (G-1)/SPG-15A, and prove's GND to E301 (G-1)/ SPG-15A.
8. Align the burst phase to +90° with the SC PHASE knob of the signal generator SG2 clockwise (↻) slowly.
9. Turn ◐RV302 (F-1)/SPG-15A clockwise (↻) slowly until the waveform of the oscilloscope's CH-2 changes from ⓑ to ⓐ. (Immediately before changing from ⓑ to ⓐ.)
10. Align the burst phase to −90° with the SC PHASE knob of the signal generator SG2 counterclockwise (↺) slowly. Make sure that the waveform of the oscilloscope's CH-2 is ⓑ during the SC PHASE knob turning.
11. Align the burst phase to +90° with the SC PHASE knob of the signal generator SG2 clockwise (↻) slowly. Make sure that the waveform of the oscilloscope's CH-2 is ⓑ during the SC PHASE knob turning.
12. If the specification is not met in step 10 or step 11, re-adjust from step 8.
13. Re-align the burst phase to reference position with the SC PHASE knob of the signal generator SG2 counterclockwise (↺) slowly.







SPG-15 board (A side)

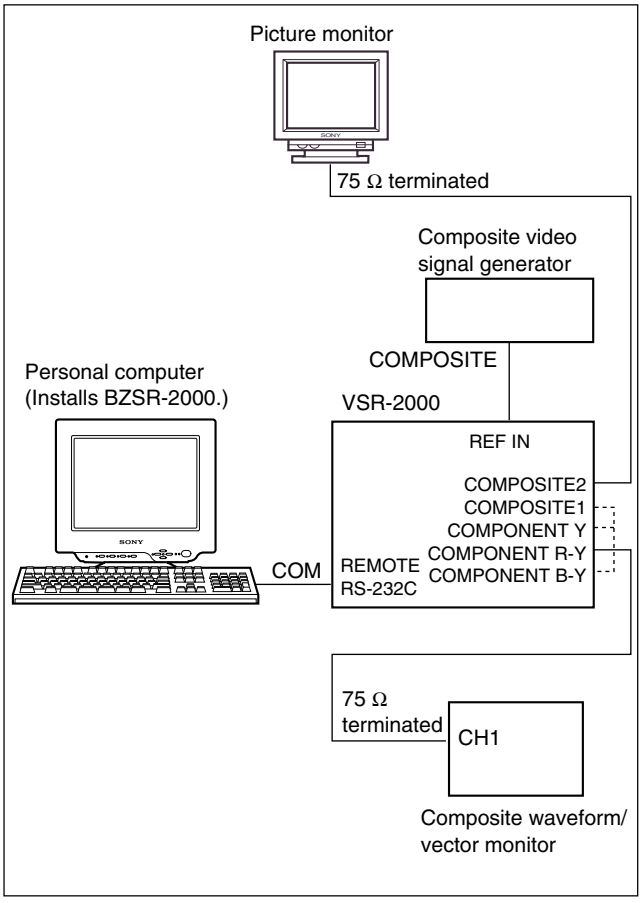
5-3. DEC-117 Board Adjustment (BKSR-2031)

The video output level and system/SC phase are adjusted by recording or playback using the BZSR-2000.

Note

For the operation procedures of the BZSR-2000, refer to the operation manual of the BZSR-2000 trial version CD-ROM.

Connection



5-3-1. 525/60 (NTSC) System

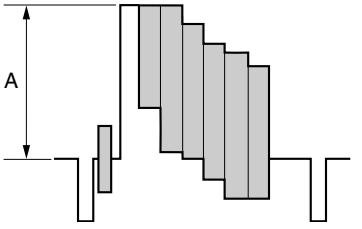
1. VIDEO OUTPUT COMPOSITE output level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “NTSC”. (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903 (D-2)/DEC-117 → All OFF
- 75 % color bar playback Y/C : 100/0/75/0

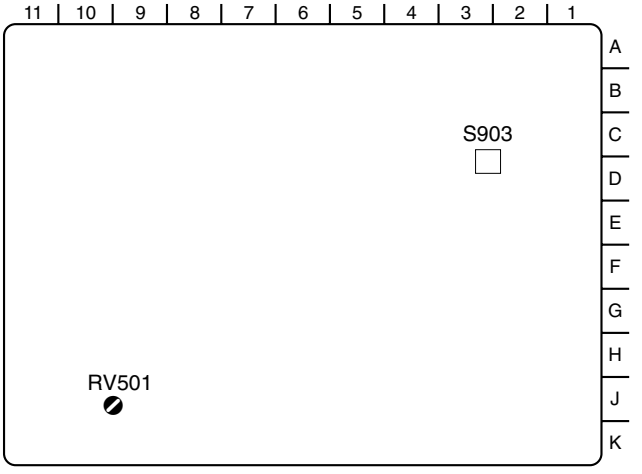
Adjustment Procedure

Equipment : Waveform monitor
Test point : COMPOSITE 1/BKSR-2031
Adj. point : ⊘RV501 (CVBS) (J-10)/DEC-117
Spec. : A = 714 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.



DEC-117 board (A side)

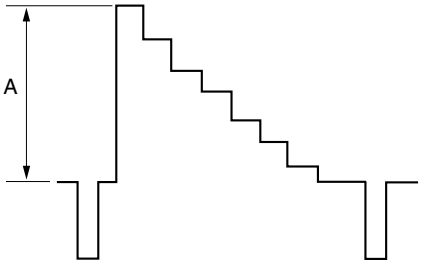
2. VIDEO OUTPUT COMPONENT Y output (BETACAM) level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “NTSC”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903 (D-2)/DEC-117 → All OFF
- 75 % color bar playback
  Y/C : 100/0/75/0

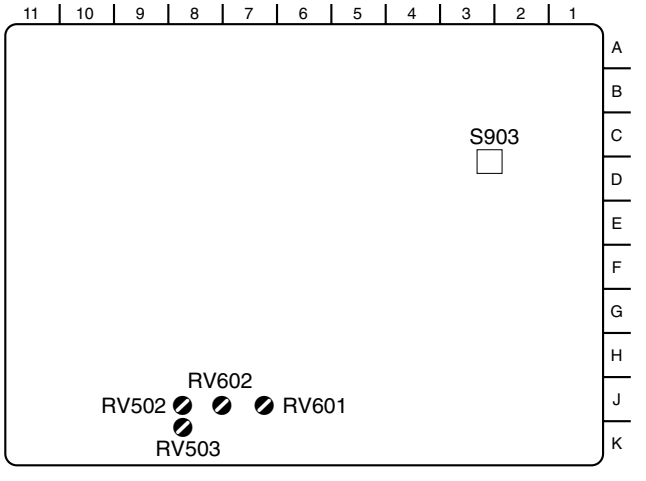
Adjustment Procedure

Equipment : Waveform monitor
Test point : Y/G OUT/BKSR-2031
Adj. point : ⊘RV502 (Y/G) (J-8)/DEC-117
Spec. : A = 714 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.



DEC-117 board (A side)

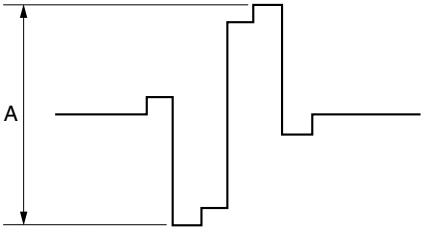
3. VIDEO OUTPUT COMPONENT R-Y output (BETACAM) level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “NTSC”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903 (D-2)/DEC-117 → All OFF
- 75 % color bar playback
  Y/C : 100/0/75/0

Adjustment Procedure

Equipment : Waveform monitor
Test point : R-Y/R OUT/BKSR-2031
Adj. point : ⊘RV602 (R-Y/R) (J-8)/DEC-117
Spec. : A = 756 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.

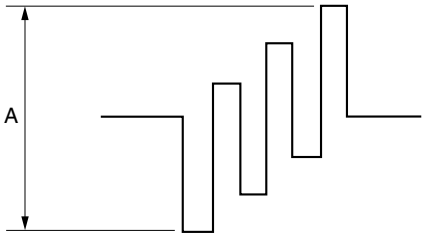
4. VIDEO OUTPUT COMPONENT B-Y output (BETACAM) level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “NTSC”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903 (D-2)/DEC-117 → All OFF
- 75 % color bar playback
  Y/C : 100/0/75/0

Adjustment Procedure

Equipment : Waveform monitor
Test point : B-Y/B OUT/BKSR-2031
Adj. point : ⊘RV601 (B-Y/B) (J-7)/DEC-117
Spec. : A = 756 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.

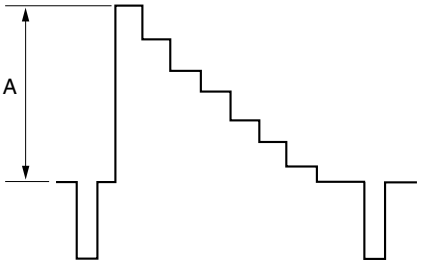
5. VIDEO OUTPUT COMPONENT Y output (CCIR) level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “NTSC”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903-2 (D-2)/DEC-117 → ON
- 100 % color bar playback
  Y/C : 100/0/100/0

Adjustment Procedure

Equipment : Waveform monitor
Test point : Y/G OUT/BKSR-2031
Adj. point : ⊘RV503 (J-8)/DEC-117
Spec. : A = 700 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.

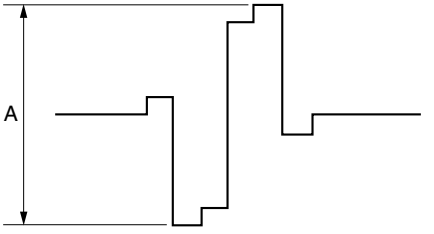
6. VIDEO OUTPUT COMPONENT R-Y output (CCIR) level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “NTSC”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903-2 (D-2)/DEC-117 → ON
- 100% color bar playback
  Y/C : 100/0/100/0

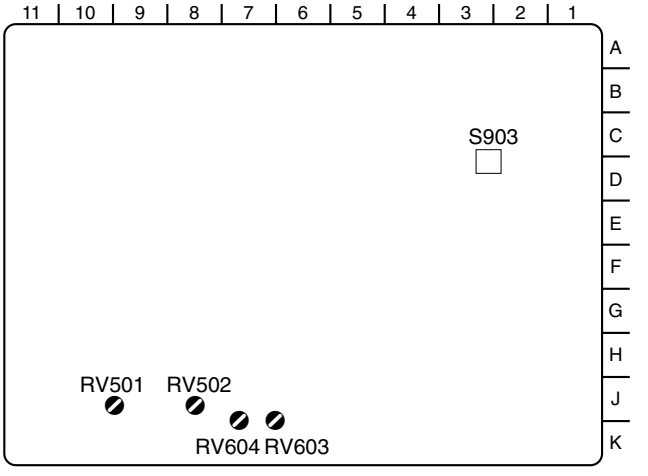
Adjustment Procedure

Equipment : Waveform monitor
Test point : R/Y R OUT/BKSR-2031
Adj. point : ⊘RV604 (J-7)/DEC-117
Spec. : A = 700 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.



DEC-117 board (A side)

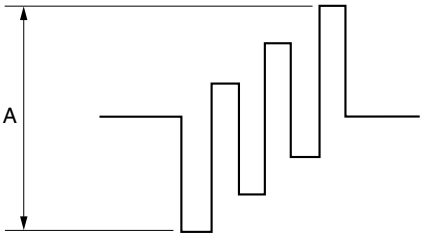
7. VIDEO OUTPUT COMPONENT B-Y output (CCIR) level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “NTSC”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903-2 (D-2)/DEC-117 → ON
- 100 % color bar playback
  Y/C : 100/0/100/0

Adjustment Procedure

Equipment : Waveform monitor
Test point : B-Y/B OUT/BKSR-2031
Adj. point : ⊘RV603 (J-7)/DEC-117
Spec. : A = 700 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.

5-3-2. 625/50 (PAL) System

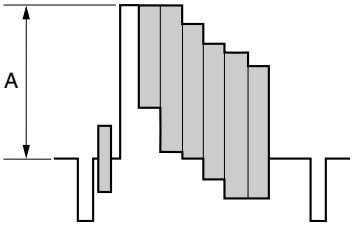
1. VIDEO OUTPUT COMPOSITE output level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “PAL”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903 (D-2)/DEC-117 → All OFF
- 75 % color bar playback
  Y/C : 100/0/75/0

Adjustment Procedure

Equipment : Waveform monitor
Test point : COMPOSITE 1/BKSR-2031
Adj. point : ⊘RV501 (CVBS) (J-10)/DEC-117
Spec. : A = 700 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.

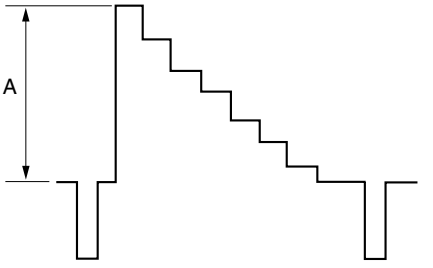
2. VIDEO OUTPUT COMPONENT Y output level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “PAL”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903 (D-2)/DEC-117 → All OFF
- 100 % color bar playback
  Y/C : 100/0/100/0

Adjustment Procedure

Equipment : Waveform monitor
Test point : Y/G OUT/BKSR-2031
Adj. point : ⊘RV502 (Y/G) (J-8)/DEC-117
Spec. : A = 700 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.

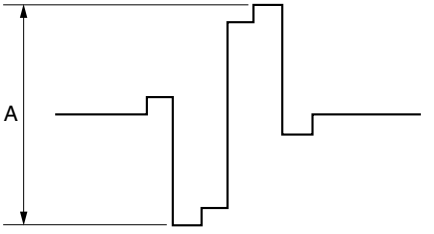
3. VIDEO OUTPUT COMPONENT R-Y output level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “PAL”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903 (D-2)/DEC-117 → All OFF
- 100% color bar playback
  Y/C : 100/0/100/0

Adjustment Procedure

Equipment : Waveform monitor
Test point : R-Y/R OUT/BKSR-2031
Adj. point : ⊘RV602 (R-Y/R) (J-8)/DEC-117
Spec. : A = 700 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.

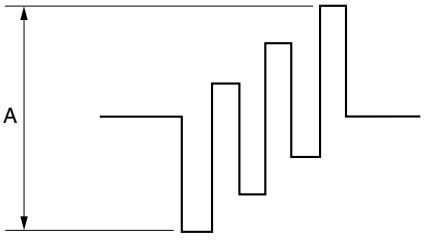
4. VIDEO OUTPUT COMPONENT B-Y output level adjustment

Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the utility screen of the supplied BZSR-2000 trial version and set the video format to “PAL”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- S903 (D-2)/DEC-117 → All OFF
- 100% color bar playback
  Y/C : 100/0/100/0

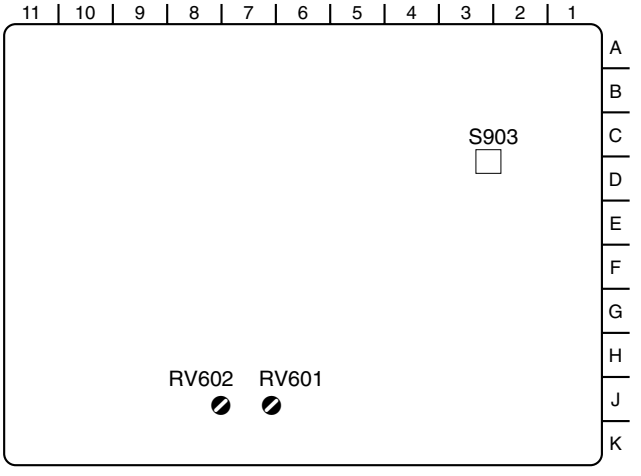
Adjustment Procedure

Equipment : Waveform monitor
Test point : B-Y/B OUT/BKSR-2031
Adj. point : ⊘RV601 (B-Y/B) (J-7)/DEC-117
Spec. : A = 700 ±7 mV p-p



Setting After Adjustment

Return the setting of S903 to the former state.

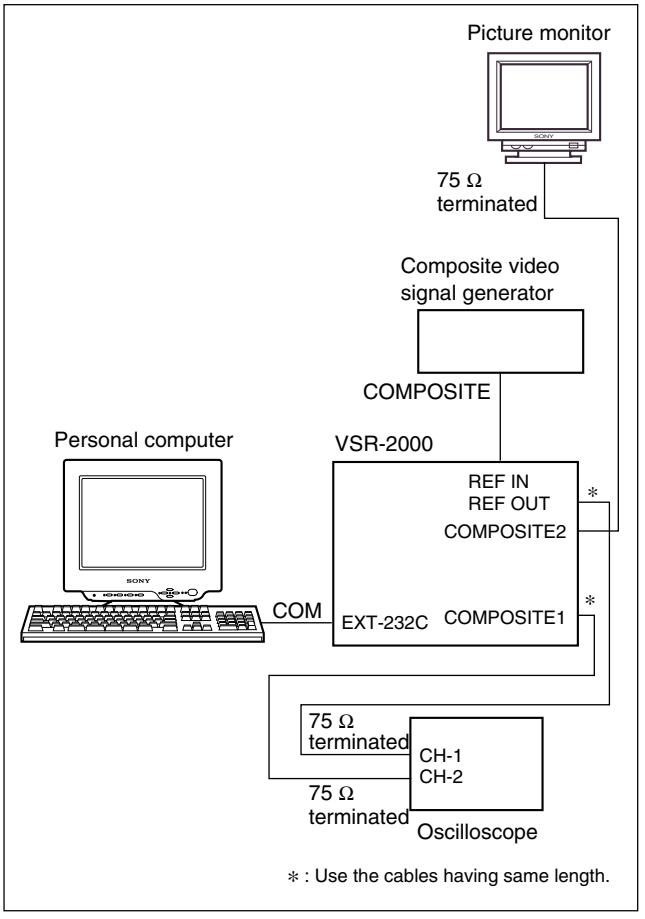


DEC-117 board (A side)

http://getMANUAL.com

5-3-3. System Phase Adjustment

Connection



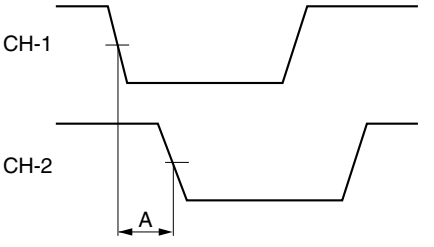
Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Remove the front panel.
- Connect the COM output of a personal computer to the EXT-232C connector on the front of the VSR-2000.
- Set the service port selector switch so as to match the slot of the board to be adjusted.
- Confirm that "DEC>" is displayed on the terminal.

Adjustment Procedures

1. Enter **V␣PHASE** using the terminal software of a personal computer and press the ENTER key. The present value appears.
2. In order to delay the output video phase, enter **V␣+** and press the ENTER key. The output video phase is delayed by 1 CLK (about 37 ns).
3. In order to advance the output video phase, enter **V␣−** and press the ENTER key. The output video phase is advanced by 1 CLK (about 37 ns).
4. In order to input values directly, enter a value in the format of **V␣0010** and press the ENTER key.
   Upper limit **0400** (hexadecimal)
   Lower limit **FC00** (hexadecimal)
5. Repeat step 2 or 3 to adjust the phase until the specification is satisified.

<Oscilloscope>
CH-1 : REF
CH-2 : COMPOSITE 1

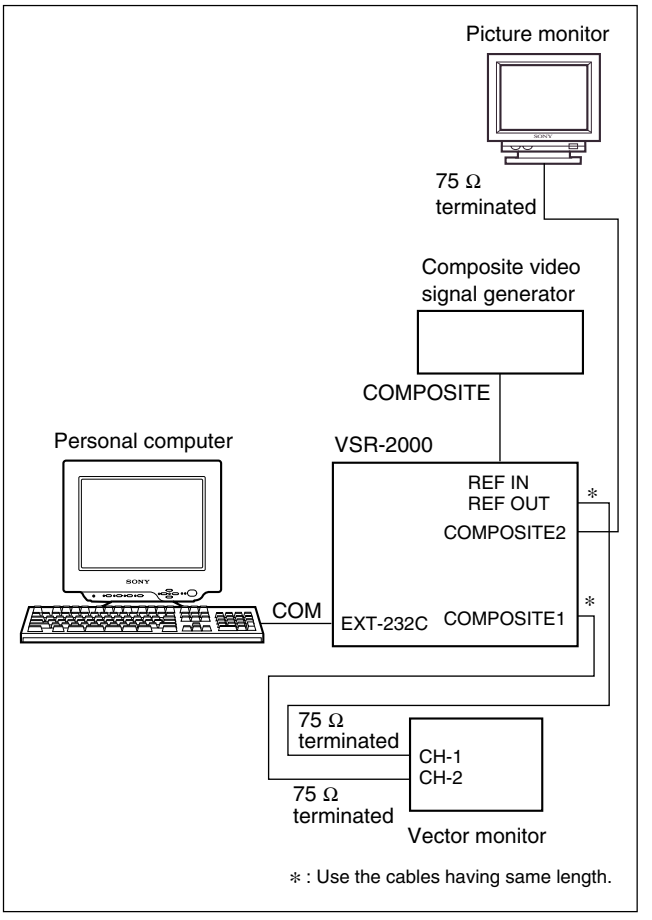


A = 0 ±37 ns

6. Enter **V␣SET** and press the ENTER key to save the adjustment value in the NVRAM.
7. Enter **RES** and press the ENTER key to set the DEC-117 board again.
   Confirm again that the specification is satisfied.

5-3-4. Subcarrier Phase Adjustment

Connection



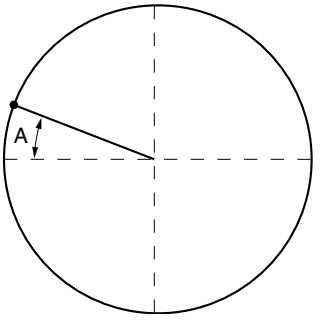
Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Remove the front panel.
- Connect the COM output of a personal computer to the EXT-232C connector on the front of the VSR-2000.
- Set the service port selector switch so as to match the slot of the board to be adjusted.
- Confirm that "DEC>" is displayed on the terminal.

Adjustment Procedures

1. Enter **SC␣PHASE** using the terminal software of a personal computer and press the ENTER key. The present value appears.
2. In order to delay the output subcarrier phase, enter **SC␣+** and press the ENTER key. The output phase is delayed by about 1.4°.
3. In order to advance the output subcarrier phase, enter **SC␣–** and press the ENTER key. The output phase is advanced by about 1.4°.
4. In order to input values directly, enter a value in the format of **SC␣10** and press the ENTER key. Adjustment range 00 to FF (hexadecimal)
5. Repeat step 2 or 3 to adjust the phase until the specification is satisified.

<Vector monitor>
CH-1 : REF
CH-2 : COMPOSITE 1
GEN LOCK : CH-1



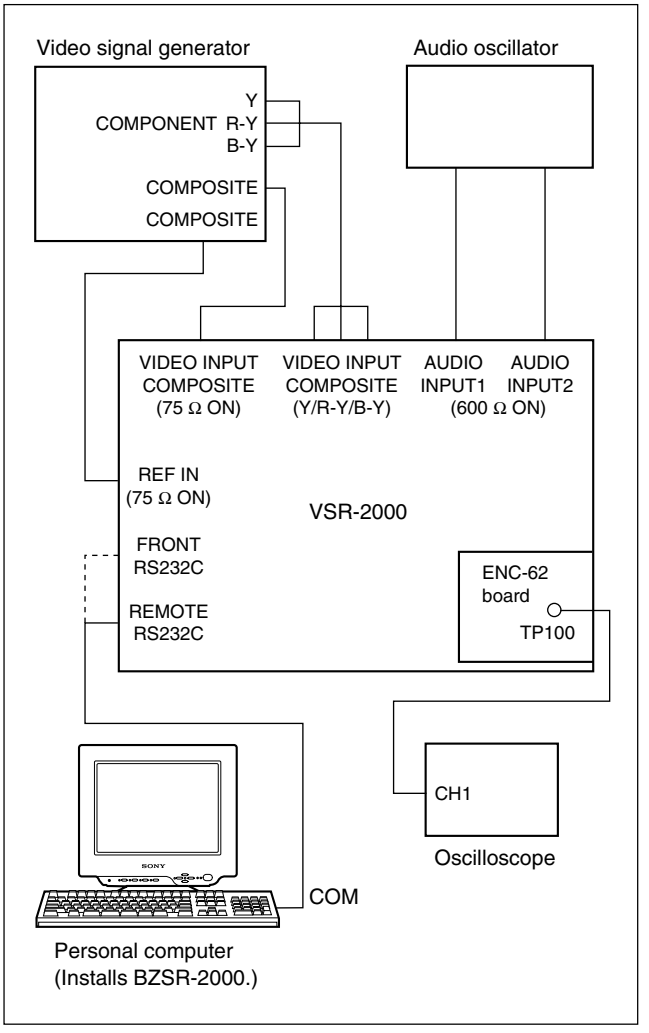
A = 0 ±1.5°

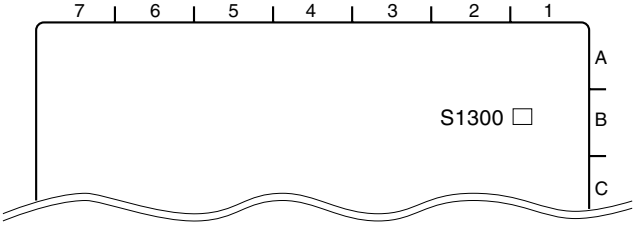
6. Enter **SC␣SET** and press the ENTER key to save the adjustment value in the NVRAM.
7. Enter **RES** and press the ENTER key to set the DEC-117 board again.
   Confirm again that the specification is satisfied.

5-4. ENC-62 Board Adjustment (BKSR-2021)

The audio input level and video input level to the BKSR-2021 (ENC-62 board) are adjusted by inputting the audio/video signals from the signal generators.

Connection



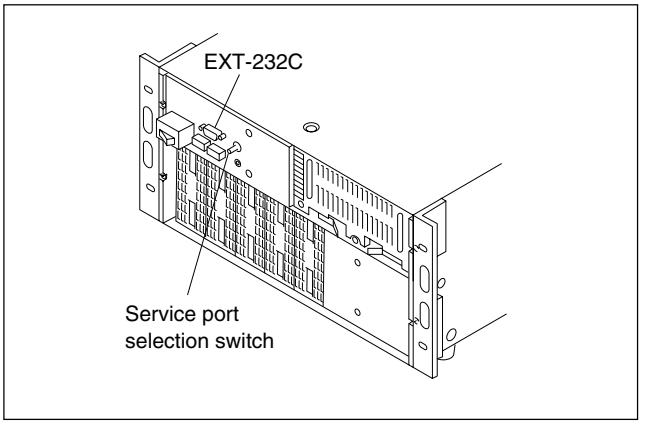


ENC-62 board (A side)

5-4-1. 525/60 (NTSC) System

Preparation

- Connect the VSR-2000 to the measuring equipment.
- Connect a personal computer to the REMOTE RS232C connector (rear panel).
- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the Utility screen of the supplied BZSR-2000 trial version and set the Video Format to “NTSC”. (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- Shut down the BZSR-2000. Remove the VSR-2000 front panel and change the connection with a personal computer to the EXT-232C connector on the front side.
- Rotate the service port selection switch to set it to the slot in which the ENC-62 board is installed. (Slot 1 : 8, Slot 2 : 9, Slot 3 : A)



- Start the terminal software (HyperTerminal in the case of Windows) of a personal computer.
- Set the communication speed as follows:

Baud rate	38400 bps
Parity	None
Flow control	None
Stop bit length	1 bit
Data bit length	1 bit

- Press the ENTER key of a personal computer to check that the prompt ANEC> appears on the terminal software display.

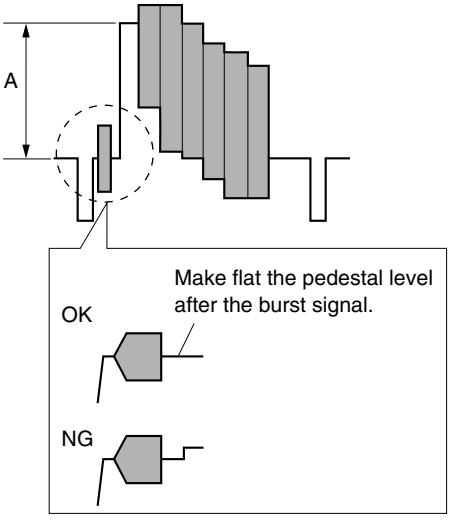
1. VIDEO COMPOSITE INPUT pedestal level adjustment

Preparation

- Input the composite 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 1] NTSC Pedestal Level Adjustment appears on the terminal software display.

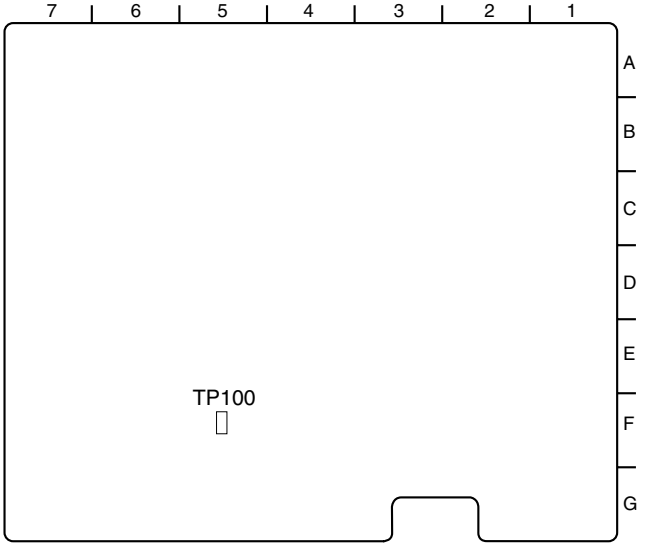
Adjustment Procedure

Equipment : Oscilloscope (CH1 : 100 mV/DIV)
Test point : TP100 [AD VIDEO] (F-5)/ ENC-62
Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer
Spec. : Make flat the pedestal level after the burst signal.



Setting after Adjustment

- Press the [ENTER] key of a personal computer to save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer to quit the adjustment mode.
- Return S1300 to the original setup (1: ON / 2, 3, 4: OFF).



ENC-62 board (A side)

2. VIDEO COMPOSITE INPUT AGC mode level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the composite 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [2] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 2] NTSC AGC Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Equipment : Oscilloscope (CH1 : 100 mV/DIV)
Test point : TP100 [AD VIDEO] (F-5)/ ENC-62
Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer
Spec. : EVR Value : XX Y LEVEL MAX : A
(Displayed on the terminal software display.)
A = 235 ±1

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

3. VIDEO COMPOSITE INPUT MANUAL mode level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the composite 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [3] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 3] NTSC Manual Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Equipment : Oscilloscope (CH1 : 100 mV/DIV)
Test point : TP100 [AD VIDEO] (F-5)/ ENC-62
Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer
Spec. : EVR Value : XX Y LEVEL MAX : A
(Displayed on the terminal software display.)
A = 235 ±1

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

4. VIDEO COMPOSITE INPUT PHASE adjustment (Automatic adjustment)

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the composite 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [4] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 4] NTSC Composite Phase Adjustment appears on the terminal software display.

Adjustment Procedure

- The adjustment is performed automatically. When the automatic adjustment is complete, the message “EVR Value : XX-OK?” appears.
- SCH must be adjusted to the center.

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

5. VIDEO COMPONENT INPUT Y level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the component 75% color bar signal (100/0/75/0 : BATA-CAM level) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [5] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 5] NTSC Y Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer

Spec. : EVE Value : XX Y LEVEL MAX : A
(Displayed on the terminal software display.)
A = 235 ±1

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1: ON / 2, 3, 4 : OFF).

6. VIDEO COMPONENT INPUT R-Y level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the component 75% color bar signal (100/0/75/0 : BATA-CAM level) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [6] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 6] NTSC R-Y Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer

Spec. :
1) Application Software Version : In the case of1.03
EVR Value : XX R-Y LEVEL MAX : A
(Displayed on the terminal software display.)
$A = 239^{+0}_{-1}$
2) Application Software Version : In the case of 1.04 and higher
EVR Value : XX R-Y LEVEL MAX : A
MIN : B P-P : C
(Displayed on the terminal software display.)
$C = 244 \pm 1$

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

7. VIDEO COMPONENT INPUT B-Y level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the component 75% color bar signal (100/0/75/0 : BATA-CAM level) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [7] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 7] NTSC B-Y Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer

Spec. :
1) Application Software Version : In the case of 1.03
EVR Value : XX B-Y LEVEL MAX : A
(Displayed on the terminal software display.)
$A = 239^{+0}_{-1}$
2) Application Software Version : In the case of 1.04 and higher
EVR Value : XX B-Y LEVEL MAX : A
MIN : B P-P : C
(Displayed on the terminal software display.)
$C = 244 \pm 1$

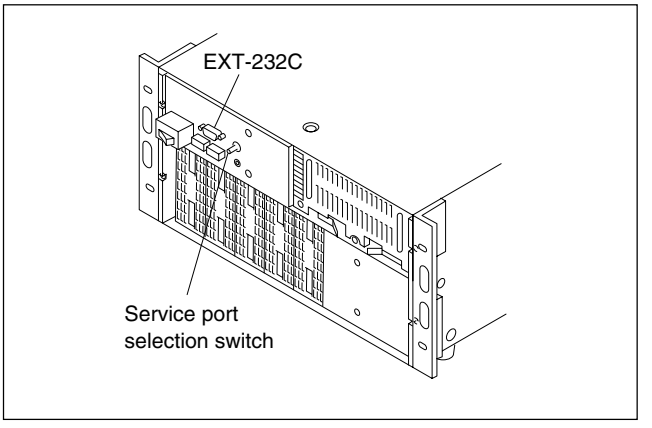
Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

5-4-2. 625/50 (PAL) System

Preparation

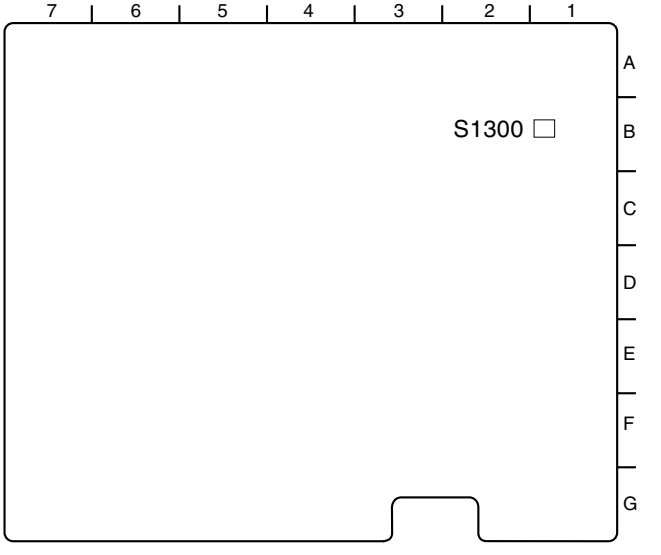
- Connect the VSR-2000 to the measuring equipment.
- Connect a personal computer to the REMOTE RS232C connector (rear panel).
- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the Utility screen of the supplied BZSR-2000 trial version and set the Video Format to “PAL”.
  (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- Shut down the BZSR-2000. Remove the VSR-2000 front panel and change the connection with a personal computer to the EXT-232C connector on the front side.
- Rotate the service port selection switch to set it to the slot in which the ENC-62 board is installed. (Slot 1 : 8, Slot 2 : 9, Slot 3 : A)



- Start the terminal software (HyperTerminal in the case of Windows) of a personal computer.
- Set the communication speed as follows:

Baud rate	38400 bps
Parity	None
Flow control	None
Stop bit length	1 bit
Data bit length	1 bit

- Press the [ENTER] key of a personal computer to check that the prompt AENC> appears on the terminal software display.



ENC-62 board (A side)

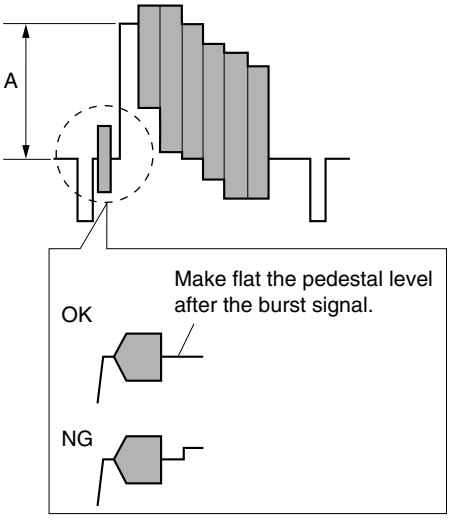
1. VIDEO COMPOSITE INPUT pedestal level adjustment

Preparation

- Input the composite 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 1] PAL Pedestal Level Adjustment appears on the terminal software display.

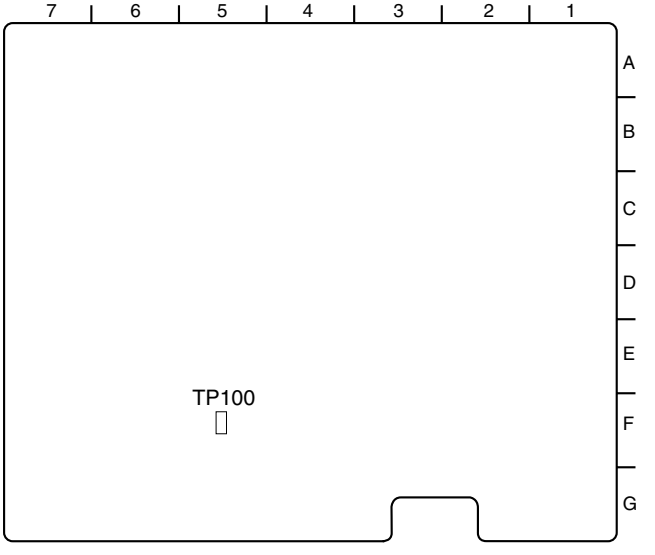
Adjustment Procedure

Equipment : Oscilloscope (CH1 : 100 mV/DIV)
Test point : TP100 [AD VIDEO] (F-5)/ ENC-62
Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer
Spec. : Make flat the pedestal level after the burst signal.



Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).



ENC-62 board (A side)

2. VIDEO COMPOSITE INPUT AGC mode level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the composite 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [2] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 2] PAL AGC Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer
Spec. : EVR Value : XX Y LEVEL MAX : A
(Displayed on the terminal software display.)
A = 235 ±1

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

3. VIDEO COMPOSITE INPUT MANUAL mode level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the composite 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [3] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 3] PAL Manual Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer
Spec. : EVR Value : XX Y LEVEL MAX : A
(Displayed on the terminal software display.)
A = 235 ±1

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

http://getMANUAL.com

4. VIDEO COMPOSITE INPUT PHASE adjustment (Automatic adjustment)

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the composite 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [4] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 4] PAL Composite Phase Adjustment appears on the terminal software display.

Adjustment Procedure

- The adjustment is performed automatically. When the automatic adjustment is complete, the message “EVR Value : XX-OK?” appears.
- SCH must be adjusted to the center.

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

5. VIDEO COMPONENT INPUT Y level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the component 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [5] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 5] PAL Y Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer

Spec. : EVR Value : XX Y LEVEL MAX : A
(Displayed on the terminal software display.)
A = 235 ±1

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

6. VIDEO COMPONENT INPUT R-Y level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the component 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [6] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 6] PAL R-Y Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer

Spec. :
1) Application Software Version : In the case of 1.03
EVR Value : XX R-Y LEVEL MAX : A
(Displayed on the terminal software display.)
$A = 239^{+0}_{-1}$
2) Application Software Version : In the case of 1.04 and higher
EVR Value : XX R-Y LEVEL MAX : A
MIN : B P-P : C
(Displayed on the terminal software display.)
$C = 224 \pm 1$

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

7. VIDEO COMPONENT INPUT B-Y level adjustment

Preparation

- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- Input the component 100% color bar signal (100/0/100/0) from the video signal generator.
- Press the [V] key of a personal computer first. Then press the [7] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 7] PAL B-Y Gain Adjustment appears on the terminal software display.

Adjustment Procedure

Adj. Point : [J] (Down)/[K] (Up) key /keyboard of a personal computer

Spec. :
1) Application Software Version : In the case of 1.03
EVR Value : XX B-Y LEVEL MAX : A
(Displayed on the terminal software display.)
$A = 239^{+0}_{-1}$
2) Application Software Version : In the case of 1.04 and higher
EVR Value : XX B-Y LEVEL MAX : A
MIN : B P-P : C
(Displayed on the terminal software display.)
$C = 224 \pm 1$

Setting after Adjustment

- Press the [ENTER] key of a personal computer and save the result of adjustment in EEPROM.
- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return S1300 to the original setup (1 : ON/2, 3, 4 : OFF).

5-4-3. AUDIO Input Adjustment

Preparation

- Connect the VSR-2000 to the measuring equipment.
- Connect a personal computer to the REMOTE RS232C connector (rear panel).
- S1300-1, -3 (B-1)/ENC-62 → ON
- S1300-2, -4 (B-1)/ENC-62 → FF
- S600 (F-2)/ENC-62 → ON
- S601 (F-3)/ENC-62 → +4
- S602 (F-2)/ENC-62 → +4
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Open the Utility screen of the supplied BZSR-2000 trial version and set the Video Format to either “NTSC” or “PAL”. (For more details, refer to the operation manual in the BZSR-2000 trial version CD-ROM.)
- Shut down the BZSR-2000. Remove the VSR-2000 front panel and change the connection with a personal computer to the EXT-232C connector on the front side.
- Rotate the service port selection switch to set it to the slot in which the ENC-62 board is installed. (Slot 1 : 8, Slot 2 : 9, Slot 3 : A)
- Start the terminal software (HyperTerminal in the case of Windows) of a personal computer.
- Set the communication speed as follows:

Baud rate	38400 bps
Parity	None
Flow control	None
Stop bit length	1 bit
Data bit length	1 bit

- Press the [ENTER] key of a personal computer to check that the prompt AENC> appears on the terminal software display.

1. AUDIO INPUT level adjustment

Preparation

- Input the 1 kHz, +4 dB signal from the audio oscillator.
- Connect the composite 100% color bar signal (100/0/100/0) to the video input from the video signal generator.
- Press the [A] and [ENTER] keys of a personal computer at the same time to enter the adjustment mode. Check that the message [Step No. 1] Audio Input Level Adjustment appears on the terminal software display.

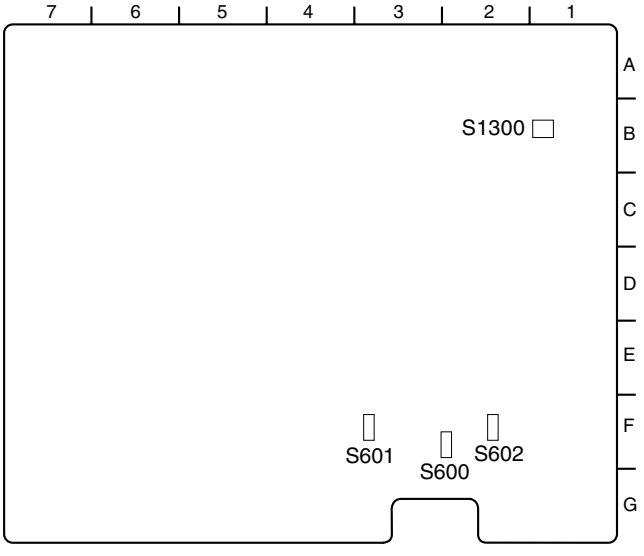
Adjustment Procedure

Adj. Point : ⊘RV602 (F-3)/ENC-62 : CH1
⊘RV603 (F-3)/ENC-62 : CH2

Spec. : CH1 LEVEL MAX : A, CH2 LEVEL MAX : A
(Displayed on the terminal software display.)
A = 3276 ±20 (4 ±0.05 dBm)

Setting after Adjustment

- Press the [SPACE] key of a personal computer and quit the adjustment mode.
- Return the respective switches to the original setups.

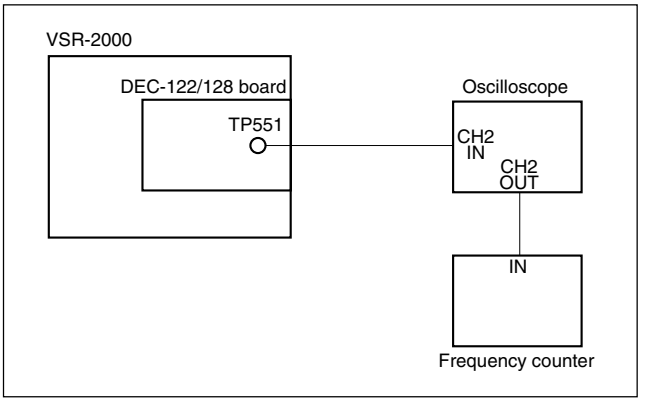


ENC-62 board (A side)

5-5. DEC-122/128 Board Adjustment (BKSR-2030)

5-5-1. SDI Free Running Frequency Adjustment

Connection



Preparation

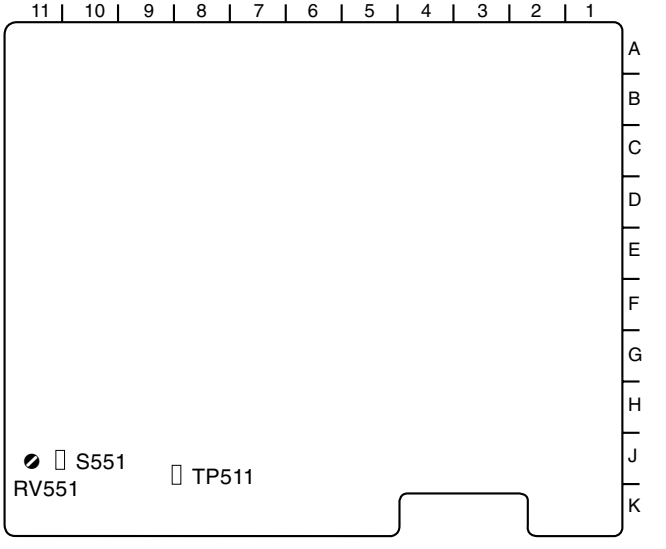
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- S551 (J-11) /DEC-122/128 → ON

Adjustment Procedure

Equipment : Frequency counter
Test point : TP551 (J-9)/ DEC-122/128
Adj. Point : ⊘RV551 (J-11)/DEC-122/128
Spec. : 27 ±0.1 MHz

Setting after Adjustment

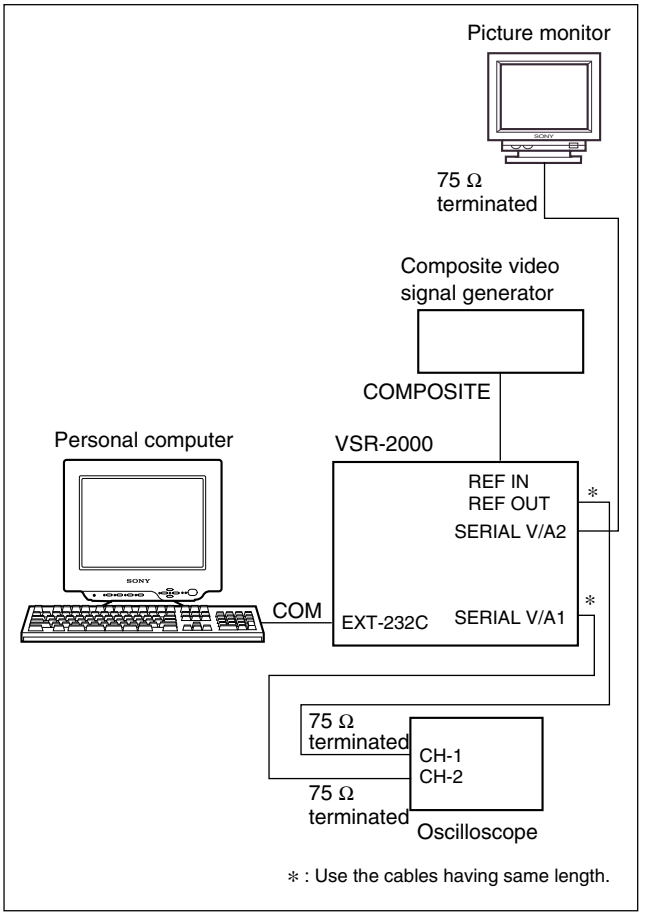
S551 (J-11) /DEC-122/128 → OFF



DEC-122/128 board (A side)

5-5-2. System Phase Adjustment

Connection



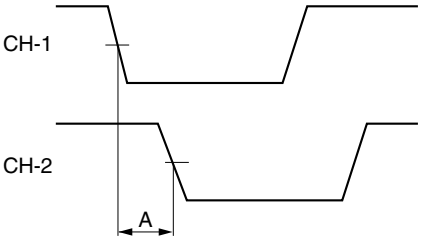
Preparation

- Connect the equipment.
- Turn on the power of the VSR-2000 and warm up the unit about 10 minutes.
- Remove the front panel.
- Connect the COM output of a personal computer to the EXT-232C connector on the front of the VSR-2000.
- Rotate the service port selection switch to set it to the slot of the board to be adjusted.
- Check that "DEC>" is displayed on the terminal.

Adjustment Procedure

1. Input **V␣PHASE** using the terminal software of a personal computer and press the [ENTER] key. The present value appears.
2. In order to delay the output video phase, enter **V␣+** and press the [ENTER] key. The output video phase is delayed by 1 CLK (about 37 ns).
3. In order to advance the output video phase, enter **V␣−** and press the [ENTER] key. The output video phase is advanced by 1 CLK (about 37 ns).
4. In order to input values directly, enter a value in the format of **V␣0010** and press the [ENTER] key.
   Upper limit **0400** (hexadecimal)
   Lower limit **FC00** (hexadecimal)
5. Repeat step 2 or 3 to adjust the phase until the specification is satisified.

<Oscilloscope>
CH-1 : REF
CH-2 : COMPOSITE 1



A = 0 ±37 ns

6. Input **V␣SET** and press the [ENTER] key to save the adjustment value in the NVRAM.
7. Input **RES** and press the [ENTER] key to reset the DEC-117 board.
   Confirm again that the specification is satisfied.

Section 6
Circuit Descriptions

VSR-2000

Recording System

The video and audio signals from the BKSR-2020/2021 (encoder) are compressed and recorded on SDRAM of a PCI control circuit as MPEG data.
The PCI control circuit on the PU-113 board transfers the SDRAM data on each encoder board to the PU-113 board according to the instructions from the system control block of the VSR-2000 and records it on the HDD array.

Playback System

On the PU-113 board, the data is read from the HDD array according to the instructions from the system control block, and transferred to SDRAM on each decoder board.
On the BKMA-2030/2031 (decoder), the compression data transferred to the SDRAM are expanded, decoded to video and audio signals, and then output.

HDD Array Block

During recording, on the PU-113 board, the compression data sent via a PCI bus is distributed into four HDDs and then recorded. Simultaneously with recording, parity data is generated from the original data and recorded on the parity HDD.
During playback, the data read from four HDDs is sent through a PCI bus to the decoder.
If one HDD can normally read no data due to failure, the data of the defective HDD is recovered based on the data of the parity HDD and remaining three HDDs.

SY-283 (with CCM-37A)

The disk protocol control signal from a host controller is input from the REMOTE terminal and sent to the DPC (disk protocol controller) CPU (IC513) on the SY-283 board. The DPC CPU interprets the received control command and issues the internal command to the MAIN CPU (IC306) via the dual port RAM (IC501, IC529). In the case of status request, the status information of the MAIN CPU is read through dual port RAM and is sent to the host controller.
The FSE (file system engine) CPU (IC410) on the SY-283 board manages the file system database of the file name on the recorded image and HDD's LBA (logical block address) data. It is controlled by a command (file generation, retrieval, or detection) that is sent from the main CPU through dual-port RAMs (IC401 and IC423).
The file system data base is kept saved in the SRAM (IC406, IC407, IC414, IC415, IC421, IC422, IC432, IC433) that are backed up by the lithium battery (BT401) and a capacitor (C434).
The CPU (IC101) on the CCM-37A board controls the network using the 10Base-T Ethernet controller (IC121). IC101 sends a command to the main CPU through the dual-port RAMs (IC801 and IC802) on the SY-283 board when the file system is downloaded or uploaded.
Main CPU sends a command or receives a status to or from each option board or HDD array (PU-113 board) through a PCI controller (IC203) while exchanging commands or status with each CPU above.
Receiving and sending data are performed using the common memory (IC1018 to IC1021) that is shared by the above described CPUs and the HDD array (PU-113 board). For example, when a file is uploaded from a network, the data is written into the common memory from the CCM-37A board. This data is read out from the common memory by the HDD array (PU-113 board) via the PCI controller.

BKSR-2020 (Encoder)

Video System

The SDI signal input from the external equipment to the SERIAL V/A INPUT connector is converted into a parallel signal by an SDI encoder (IC100) to produce a digital component signal and sent through a D1 decoder (IC108) to TBC IC (IC112).
After the sync system is selected by the TBC IC, the data is sent to the re-size circuit (IC302) and re-sized to the desired horizontal pixel size. After that, the movement of the signal is detected by ENC3 IC (IC400). The signal is then converted into MPEG image data by an encoder IC (IC405) and recorded on the PCI SDRAMs (IC1401 to IC1404).

Audio System

A SDI embedded audio signal is converted by Audio receiver (IC604) and input to the selector IC (IC1004). The signal is level-controlled by a DSP circuit (IC902) and audio-compressed by MPEG encoders (IC700 and IC800) after the selector IC is output. The compressed data is passed through a FIFO circuit and recorded on PCI SDRAMs (IC1401 to IC1404). The signal is passed through a FIFO circuit without compression and recorded on PCI SDRAM when a non-compression audio signal is selected.

Auxiliary Data

The closed caption data is converted to the 2 bytes/field data by the detect IC (IC502) and is written into the PCI SDRAM via the CPU bus.

BKSR-2031 (Decoder)

Video System

The image data in PCI SDRAM is input through a DMA control circuit (IC201) to MPEG decoders (IC301 and IC331) and decoded to a base band image signal. The two decoders are used for selection and reproduction of the frame precision. The video signal passed through a selector circuit is input to the VIDEO encoder (IC516 and IC616) and the analog composite signal and analog component signal are output.

Audio System

The audio data in PCI SDRAM is input through a DMA control circuit (IC201) to MPEG audio decoders (IC703 and IC705) and decoded from an audio signal to a PCM audio signal. The decoded signal is then level-controlled by DSP circuit (IC706). After that, the signal is output to the Audio D/A converters (IC813 and IC8013) and the analog signal is output.

Auxiliary Data

The auxiliary data is PCI SDRAM is input through a DMA control circuit (IC201) to a FIFO circuit (IC202). Then the auxiliary data passes through the CPU and is added to the video signal as the closed caption signal.

BKSR-2021 (Encoder)

Video System

The analog composite video signal from the external equipment is input to the COMPOSITE VIDEO INPUT connector and sent to the VCA & Clamp IC (IC106) where the signal level is controlled. The input signal is then sent to the A/D converter (IC135) where the signal is A/D converted and then sent to the Composite Decode IC (IC313). In IC313, the input signal is Y/C separated and converted to the digital component signal.
The analog component video signal from the external equipment is input to the COMPONENT (Y/R-Y/B-Y) VIDEO INPUT connector and sent to the AMP & Clamp circuit (Q209 to Q211, Q213 to Q218) where the signal level is controlled and then sent to the Composite Decode IC (IC313). In IC313, the input signal is A/D converted and receives the multiplexing processing so that the input signal is converted to the digital component signal.
The digital component signal that is selected by the Composite Decode IC (IC313) from the digital component input signals, is sent to the TBC IC (IC413) where the desired sync signal is selected, and is sent to the Resize IC (IC420) via the Setup Removal IC (IC416), where the component signal is resized to the desired horizontal pixel size. The digital component signal is then sent to ENC3 IC (IC400) where motion is detected, converted to the MPEG picture data by Encode IC (IC405) and recorded on PCI SDRAM (IC1401 to IC1404).

Audio System

The analog audio signal from the external equipment is input to the AUDIO INPUT 1/2 connectors and sent to the AMP IC (IC600 to IC603, IC608 to IC611) where the signal level is controlled. The input signal is then sent to the A/D IC (IC618) where the input signal is converted to the digital serial audio signal that is then sent to the Selector IC (IC1004).
After the digital serial audio signal is output from the Selector IC, it receives gain control at DSP (IC902) and then receives audio compression at MPEG Encoder (IC700). The compressed data is recorded on PCI SDRAM (IC1401 to IC1404) via FIFO (IC706).

Auxiliary Data

The closed caption data that is superimposed on the video signal is converted to the 2-byte/field data by the Detect IC (IC502) and is recorded on PCI SDRAM via the CPU bus and AUX DPRAM (IC503).

BKSR-2030 (Decoder)

Video System

The pictures recorded in the PCI SDRAM are read and sent to the MPEG Decoder (IC301, IC331) via the DMA Control IC (IC201), where the signal is decoded to the base band video signal. The video signal system contains the two decoders in order to enable the signal switching with the frame accuracy. The video signal to which the closed caption signal is added at the signal switching circuit is input to the VIDEO Encoder (IC502) where the AES Audio signal is added and is output from the SDI Encoder (IC551) as the SDI signal.

Audio System

The audio data recorded in the PCI SDRAM is read and sent to the MPEG Audio Decoder (IC603, IC605, IC607, IC609) via the DMA Control IC (IC201), where the signal is decoded to the PCM audio signal from the audio signal. The PCM audio signal is then sent to the DSP (IC708, IC711) where the signal level is controlled. Then the PCM audio signal takes the two signal paths: One path is connected to the VIDEO Encoder (IC502) where the PCM audio signal is multiplexed into the SDI signal. The other path is connected to the Audio D/A Converter (IC813, IC8013) from which the signal is output as the analog audio signal.

Auxiliary Data

The auxiliary data recorded in the PCI SDRAM is read and sent to the FIFO (IC202) via the DMA Control IC (IC201). The auxiliary data is then sent to the Closed Caption PLD (IC401) where the closed caption signal is created from the auxiliary data, and added to the video signal.

BKSR-2070 (100BASE-T)

The CPU (IC1) used on the CCM-38A board mainly has the three internal modules below.

1. Microprocessor
   The microprocessor has a core compatible with PowerPC601 and operates with a clock of 50 MHz. It controls each component, buckets TCP/IP, and controls an FTP protocol.

2. Communication processor module
   The communication processor module individually controls the communication with each block.
   - SMC2 : Control of RS-232C
   - SCC2 : The communication processor module is connected to external driver (IC251) using a 7W interface and controls a media access to the 100BASE-T Ethernet port for debugging. (However, IC251 is not mounted.)
   - SPI : Control of EEPROM

3. Media access controller (MAC)
   An internal media access controller (MAC) of Fast Ethernet is provided. The media access controller is directly connected between an external driver IC and CPU (IC1) using an MII interface. All the basic components are housed in a single CPU due to the use of this CPU.
   In addition, external SDRAM of 64 Mbytes is mounted as main memory.
   Eight chips of 4 Mbits × 16 bits are mounted. These chips are designed so that they can be reduced in pairs according to the amount of application memory used (because the data bus of CPU is 32 bits in depth).

External Flash Memory ROM (IC456, IC457) of 4 Mbytes is mounted as program ROM. Two chips of 1 Mbit × 16 bits are mounted. These chips can be connected to an individual 16 bits bus access area for each chip so as to erase and write data separately. This enables the generation management of firmware and software.

Basically, both SDRAM and FLASH ROM have an interface that CPU can directly connect without using an external circuit. However, a bus transceiver and driver exist in the bus because of limitation in an external fan output. Two CPLDs (IC151 : EPM7256ATC144-10 and IC152 : EPM7128ATC100-10) are mounted to control the bus transceiver and driver. IC151 takes charge of reset and external I/O operations. IC152 controls the bus transceiver.
The CCM-38A board is an interface board for Fast Ethernet. It must exchange data with the master board (SY-283 board). For Fast Ethernet, two memory areas exist on the SY-283 board.
The two RAMs below are mounted.
- Dual Port RAM of 16 Kbytes :
  Used for commands and status.
- Pci Bank RAM of 2 Kbytes :
  Used for transferring FTP data at high speed.

Therefore, an interface driver is provided.
The CCM-38A board operates with a voltage of 3.3 V, and a voltage of 5.0 V is supplied to the external driver.

http://getMANUAL.com

Section 7
Spare Parts

7-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with "o" at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.
In need of repair, get components shown in the list and repair using them.

5. Replacement of Optional Boards

If it is necessary to replace the following optional boards, place an order the BKSR-2xxx through the sales route.

- ENC-58 board : BKSR-2020
- ENC-62 board : BKSR-2021
- DEC-122/128 board : BKSR-2030
- DEC-117 board : BKSR-2031
- CCM-38A board : BKSR-2070

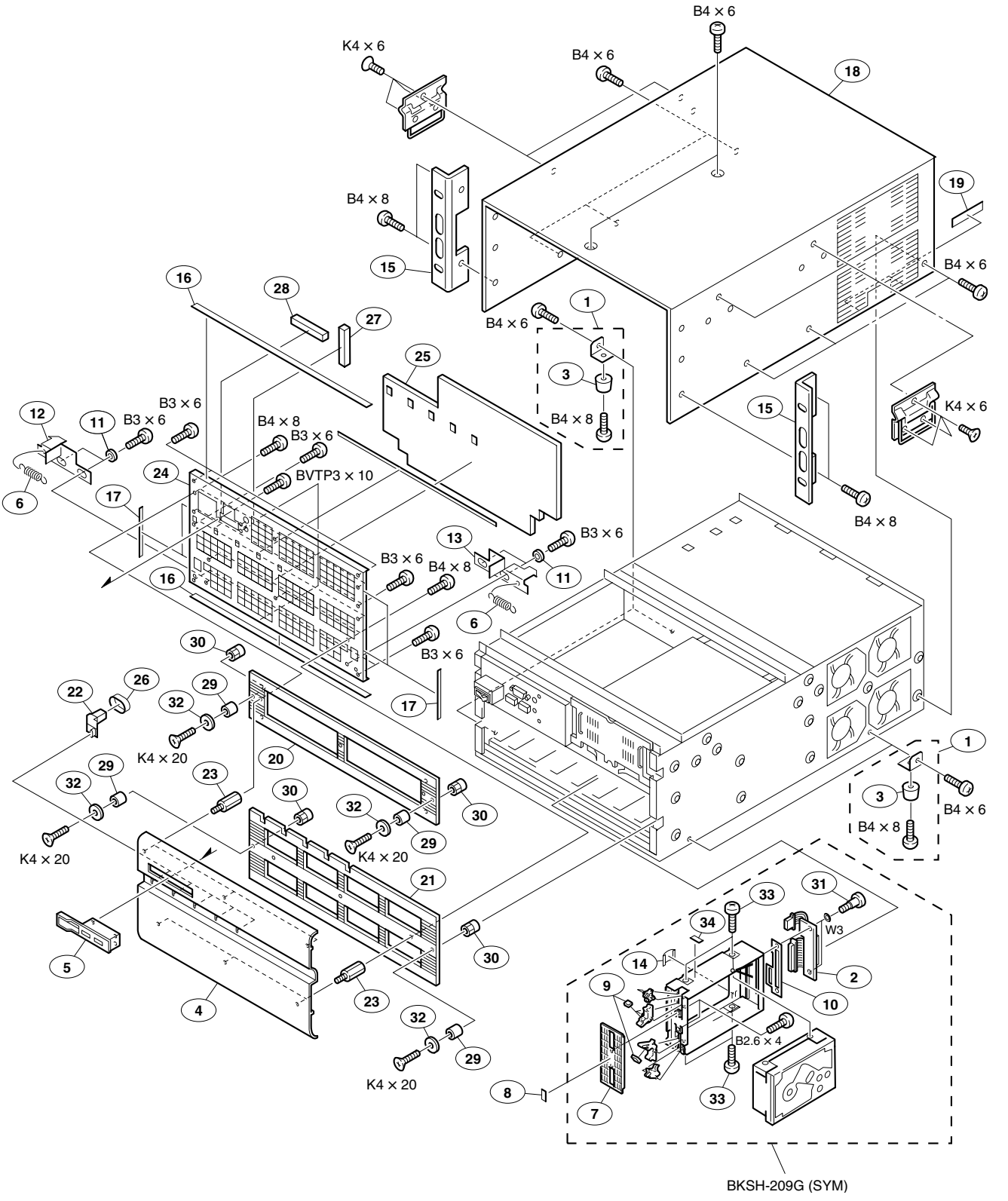
6. Replacement of Power Supply Unit

If it is necessary to replace the power supply unit, place an order the BKMA-PS70 through the sales route.

7. Replacement of HDD unit

If it is necessary to replace the HDD unit, place an order the BKSH-209G.

7-2. Exploded Views

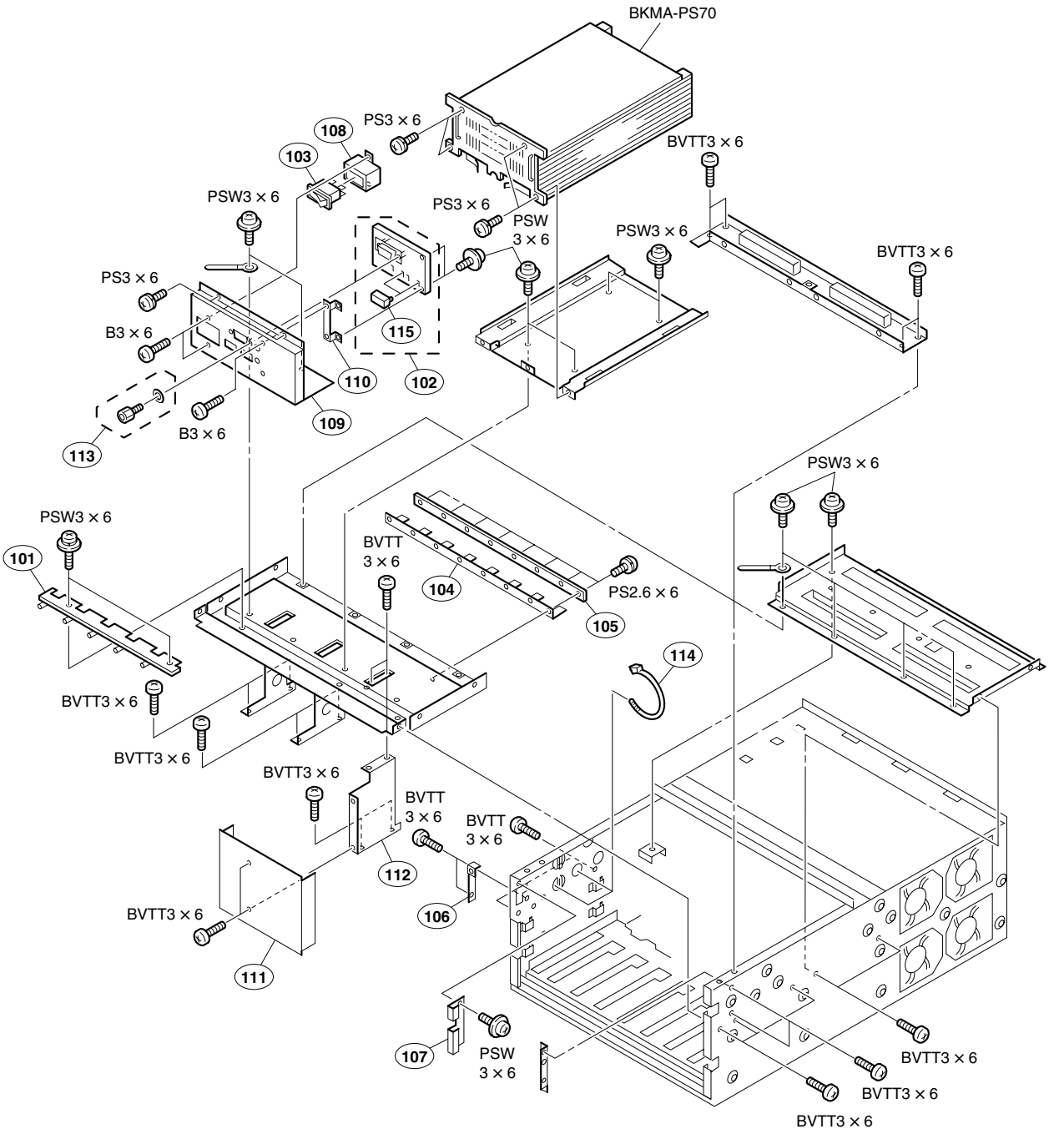


No.	Part No.	SP	Description
1	A-8278-436-A	o	HOLDER, FOOT ASSY
2	A-8311-399-A	o	MOUNTED CIRCUIT BOARD, CN-1405
3	X-3316-715-1	s	FOOT ASSY
4	X-3605-579-1	o	ASSY, PANEL, ORNAMENTAL
5	X-3605-580-1	o	ASSY, ESCUTCHEON, POWER SWITCH
6	3-535-369-99	s	SPRING, TENSION
7	3-605-394-02	o	PLATE, FRONT
8	3-605-401-01	o	LABEL, HDD NO.
9	3-605-402-01	s	CUSHION(CR)
10	3-605-412-03	o	SHEET, INSULATING
11	3-605-889-01	o	SPACER
12	3-605-890-01	o	BRACKET PANEL (L)
13	3-605-898-01	o	BRACKET PANEL (R)
14	3-615-881-01	o	SPRING, SHIELD
15	3-615-889-02	o	RACK ANGLE (5U)
16	3-615-895-01	o	E.SHIELD (L)
17	3-615-896-01	o	E.SHIELD (M)
18	3-615-939-04	o	COVER
19	3-616-308-01	o	E.SHIELD (G)
20	3-622-876-01	o	PANEL, FRONT (A)
21	3-622-880-01	o	PANEL(B), FRONT
22	3-622-881-01	o	LENS, HDD
23	3-622-882-01	o	SUPPORT
24	3-622-883-01	o	PLATE, SHIELD
25	3-622-887-01	s	FILTER, FRONT (PUR-FM)
26	3-622-891-01	o	TUBE
27	3-623-327-01	o	E.SHIELD (5X5)
28	3-623-327-11	o	E.SHIELD (5X5)
29	3-655-253-01	o	SPECER (DIA 4X7)
30	3-680-316-00	s	NUT, M4 NYLON
31	3-694-825-01	s	SCREW,SPECIAL HEAD (STEEL)
32	3-703-225-00	s	WASHER (4 DIA.), ORNAMENTAL
33	4-613-955-11	s	SCREW
34	4-622-571-01	s	SEAL (PAPER)

Screws/Washers

7-621-773-86	s	SCREW +B2.6X4 (EP-FE/CU,NI,CR)
7-682-260-04	s	SCREW +K 4X6 (EP-FE/CU,NI,CR)
7-682-266-04	s	SCREW +K 4X20 (EP-FE/CU,NI,CR)
7-682-547-04	s	SCREW +B3X6 (EP-FE/CU,NI,CR)
7-682-560-04	o	SCREW +B4X6 (EP-FE/CU,NI,CR)
7-682-561-04	s	SCREW +B4X8 (EP-FE/CU,NI,CR)
7-685-647-79	s	SCREW +BVTP3X10 (EP-FE/ZNBK/CM2)
7-688-004-11	o	WASHER W4 (M) (EP-FE/ZN/CM2)

LCD Case

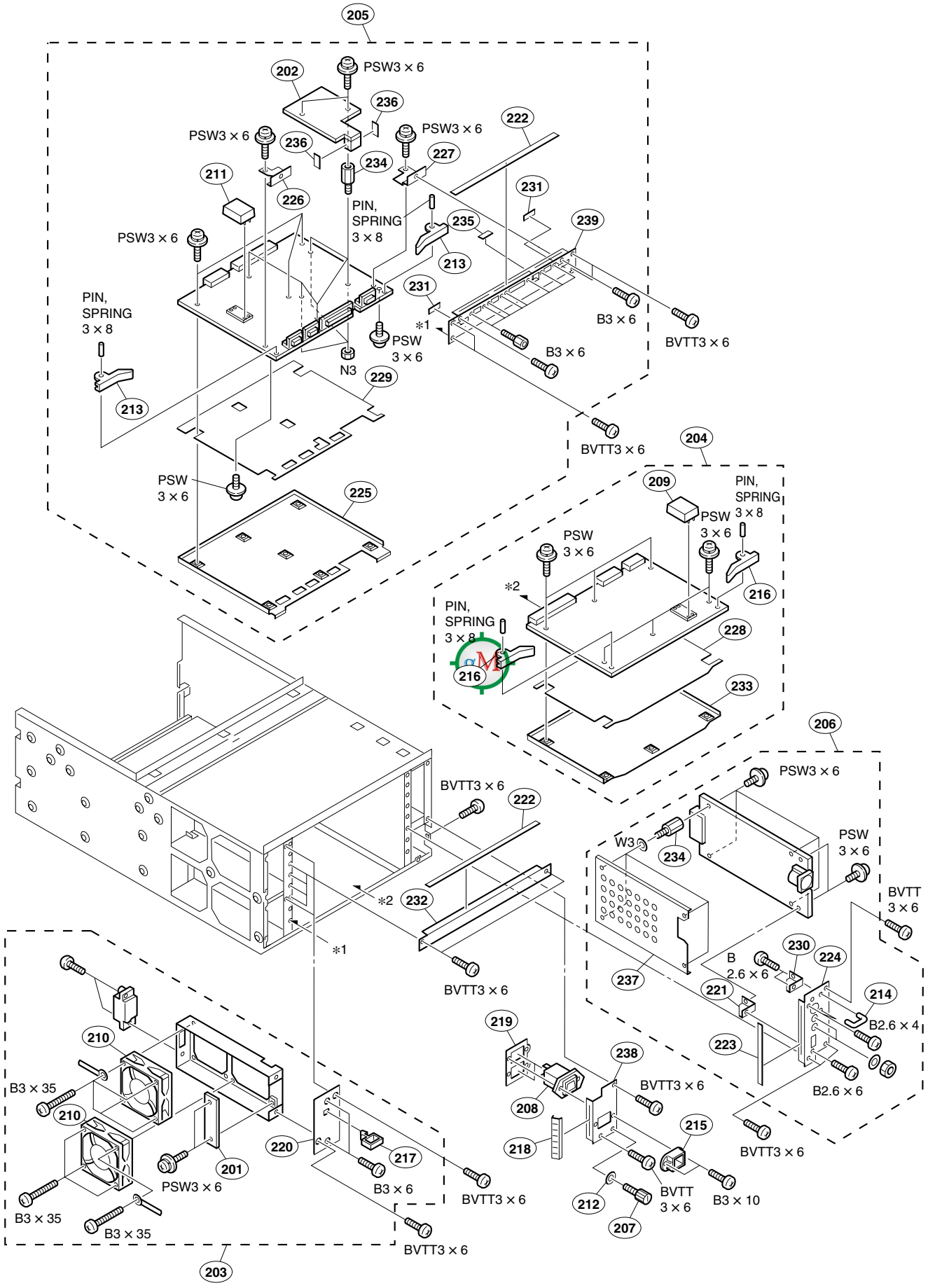

BKMA-PS70
PS3 × 6
108
103
PSW3 × 6
PS3 × 6
PSW
3 × 6
BVTT3 × 6
PSW3 × 6
BVTT3 × 6
PS3 × 6
B3 × 6
115
110
102
109
B3 × 6
113
PSW3 × 6
PSW3 × 6
101
BVTT
3 × 6
104
PS2.6 × 6
105
114
BVTT3 × 6
BVTT3 × 6
BVTT3 × 6
BVTT
3 × 6
BVTT
3 × 6
112
106
BVTT3 × 6
111
107
PSW
3 × 6
BVTT3 × 6
BVTT3 × 6
BVTT3 × 6

No.	Part No.	SP	Description
101	1-674-710-11	o	PRINTED WIRING BOARD, LE-224
102	1-674-711-11	o	PRINTED WIRING BOARD, LE-225
103	⚠1-692-622-11	s	SWITCH, POWER
104	3-615-854-21	o	CADDY SPRING (UPPER)
105	3-615-855-01	o	RETAINER, SPRING (UPPER)
106	3-615-918-01	o	BRACKET, FRONT
107	3-622-877-02	o	STAY, FRONT(L)
108	3-622-878-01	o	STAY, SWITCH
109	3-622-879-02	o	PANEL, CHASSIS
110	3-622-884-01	o	STAY, PC BOARD
111	3-622-885-01	o	PANEL, CADDY BLANK
112	3-622-886-01	o	STAY, GUIDE
113	3-623-950-01	o	NUT, SCREW LOCK
114	3-701-991-01	o	BAND, BINDING (PLA)
115	4-045-740-01	s	CASE, LAMP

Screws/Washers

	7-628-254-10	s	SCREW +PS2.6X6 (EP-FE/ZNBK/CM2
	7-682-547-09	s	SCREW +B3X6 (EP-FE/ZNBK/CM2)
	7-682-647-09	s	SCREW +PS3X6 (EP-FE/ZNBK/CM2)
	7-682-947-01	s	SCREW +PSW3X6 (EP-FE/ZN/CM2)
	7-685-871-01	s	SCREW BVTT3X6 (EP-FE/ZN/CM2)
	7-685-871-09	s	SCREW,+BVTT3X6(EP-FE/ZNBK/CM)

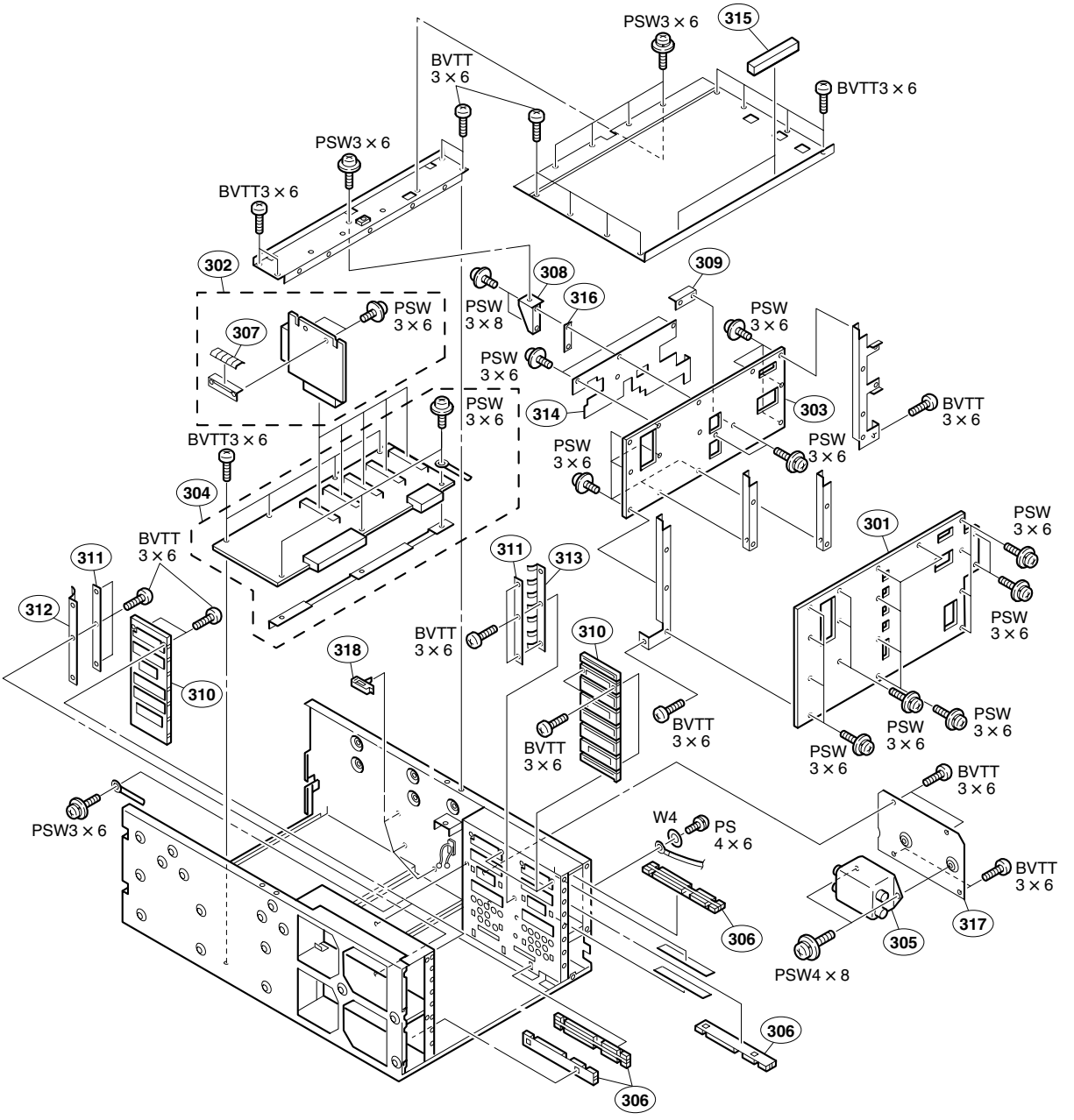
Plug-in Boards and Fan Motor



No.	Part No.	SP	Description
201	A-8319-594-A	o	MOUNTED CIRCUIT BOARD, LE-193
202	A-8324-440-A	o	MOUNTED CIRCUIT BOARD, CCM-37A
203	A-8320-041-A	s	FAN ASSY
204	A-8323-228-A	s	MOUNTED CIRCUIT BOARD, PU-113
205	A-8323-229-A	o	MOUNTED CIRCUIT BOARD, SY-283
206	A-8323-649-A	s	MOUNTED CIRCUIT BOARD, SPG-15A
207	X-2068-004-0	s	TERMINAL ASSY
208	⚠ 1-251-385-11	s	INLET (WITH NOISE FILTER)
209	⚠ 1-528-749-11	s	BATTERY, MOLD TYPE (LITHIUM)
210	1-763-175-11	s	FAN, DC
211	1-767-156-11	s	OSCILLATOR, CRYSTAL (IN BATTERY)
212	2-068-008-00	s	WASHER
213	2-182-909-01	o	LEVER, PC BOARD
214	2-527-909-01	s	HANDLE, PANEL
215	2-990-241-02	s	HOLDER (A), PLUG
216	3-166-184-01	o	LEVER, PC BOARD
217	3-172-089-01	o	HANDLE
218	3-189-268-01	o	SPRING, SHIELD
219	3-615-886-01	o	NUT, PLATE
220	3-615-911-03	o	PANEL, FAN
221	3-615-921-01	o	PANEL BRACKET (B), SPG
222	3-615-923-02	o	E.SHIELD (B)
223	3-615-924-03	o	E.SHIELD (J)
224	3-615-926-02	o	PANEL, PWB (SPG)
225	3-615-927-01	o	PLATE, SHIELD (SY-253)
226	3-615-929-01	o	SY BRACKET, PANEL (R)
227	3-615-930-01	o	SY BRACKET, PANEL (L)
228	3-615-931-02	o	SHEET, INSULATING (PU)
229	3-615-932-02	o	SHEET, INSULATING (SY)
230	3-615-934-01	o	PANEL BRACKET (A), SPG
231	3-615-936-01	o	E.SHIELD (H)
232	3-615-996-01	o	PANEL, BLANK, (REAR)
233	3-616-302-02	o	PLATE, SHIELD (PU-102)
234	3-616-310-02	o	BRACKET, PWB
235	3-616-347-01	o	E.SHIELD (N)
236	3-616-393-01	o	E.SHIELD (O)
237	3-616-395-01	o	PLATE, SHIELD (SPG)
238	3-622-874-01	o	PANEL, REAR (AC IN)
239	3-623-297-01	o	PANEL (F), PWB (SY-283)

Screws/Washers

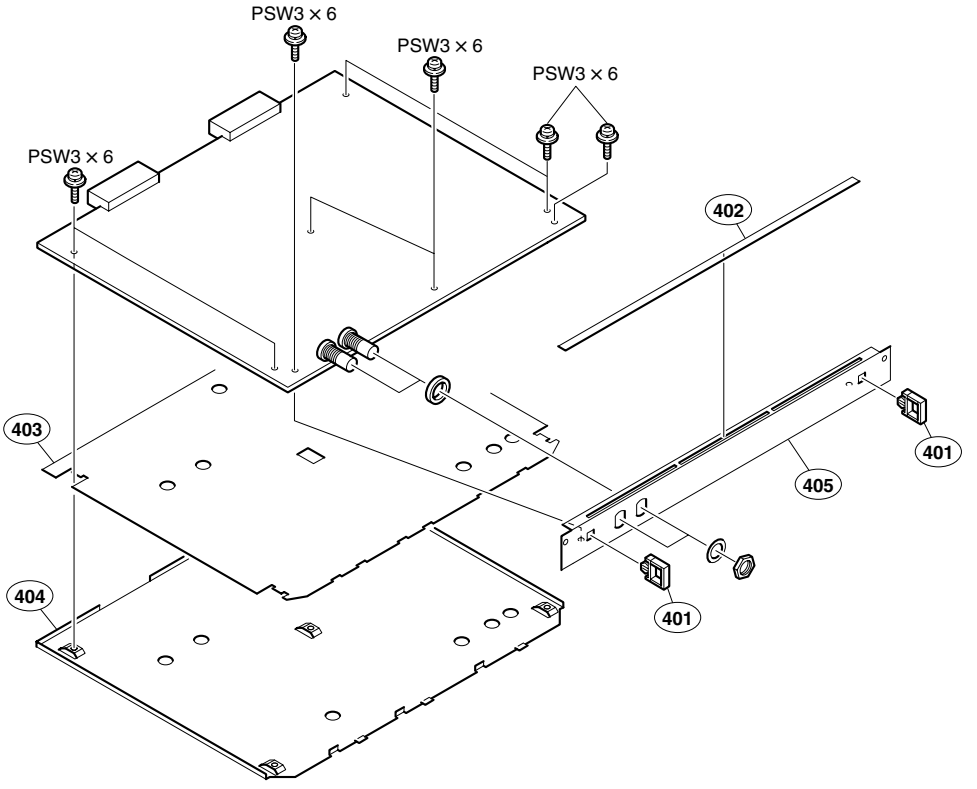
	7-621-773-95	s	SCREW +B2.6X6 (EP-FE/ZNBK/CM2)
	7-621-775-10	s	SCREW +B2.6X4 (EP-FE/ZNBK/CM2)
	7-626-320-11	s	SPRING PIN,3X8 (STEEL)
	7-682-547-09	s	SCREW +B3X6 (EP-FE/ZNBK/CM2)
	7-682-549-09	s	SCREW +B 3X10 (EP-FE/ZNBK/CM2)
	7-682-556-09	s	SCREW +B3X35 (EP-FE/ZNBK/CM2)
	7-682-947-01	s	SCREW +PSW3X6 (EP-FE/ZN/CM2)
	7-684-023-04	s	NUT M3 TYPE2 (EP-FE/ZN/CM2)(ST)
	7-685-871-01	s	SCREW BVTT3X6 (EP-FE/ZN/CM2)
	7-688-003-01	s	WASHER W3 SMALL (EP-FE/ZN/CM2)


PSW3 × 6
315
BVTT
3 × 6
BVTT3 × 6
PSW3 × 6
BVTT3 × 6
302
308
309
PSW
3 × 8
316
PSW
3 × 6
307
PSW
3 × 6
PSW
3 × 6
314
303
BVTT
3 × 6
BVTT3 × 6
PSW
3 × 6
PSW
3 × 6
304
301
PSW
3 × 6
BVTT
3 × 6
311
311
313
312
PSW
3 × 6
BVTT
3 × 6
310
318
310
BVTT
3 × 6
BVTT
3 × 6
PSW
3 × 6
PSW
3 × 6
PSW
3 × 6
BVTT
3 × 6
PSW3 × 6
W4
PS
4 × 6
BVTT
3 × 6
306
317
305
PSW4 × 8
306
306

No.	Part No.	SP	Description
301	A-8319-592-A	o	MOUNTED CIRCUIT BOARD, MB-756
302	A-8319-603-A	o	MOUNTED CIRCUIT BOARD, IF-678
303	A-8322-853-A	o	MOUNTED CIRCUIT BOARD, AC-205
304	A-8323-232-A	o	MOUNTED CIRCUIT BOARD, MB-755A
305	⚠ 1-234-164-11	s	FILTER, NOISE
306	3-169-099-01	o	RAIL, PC BOARD GUIDE
307	3-189-268-01	o	SPRING, SHIELD
308	3-615-892-02	o	BRACKET, REINFORCEMENT
309	3-615-906-01	o	BRACKET, IF (C)
310	3-615-995-01	o	RAIL GUIDE
311	3-616-301-01	o	RETAINER, SPRING, GROUND
312	3-616-303-01	o	SPRING, GROUND (R)
313	3-616-305-01	o	SPRING, GROUND (L)
314	3-616-319-02	o	INSULATOR, AC
315	3-616-394-01	o	E.SHIELD (E)
316	3-616-396-01	o	SPACER
317	3-622-873-01	o	PLATE, FILTER
318	3-686-073-01	o	CLAMP, HARNESS

Screws/Washers

	7-682-660-01	s	SCREW +PS4X6
	7-682-947-01	s	SCREW +PSW3X6 (EP-FE/ZN/CM2)
	7-682-948-01	s	SCREW +PSW3X8 (EP-FE/ZN/CM2)
	7-682-961-01	s	SCREW +PSW4X8 (EP-FE/ZN/CM2)
	7-685-871-01	s	SCREW BVTT3X6 (EP-FE/ZN/CM2)
	7-688-004-11	s	WASHER W4, MIDDLE

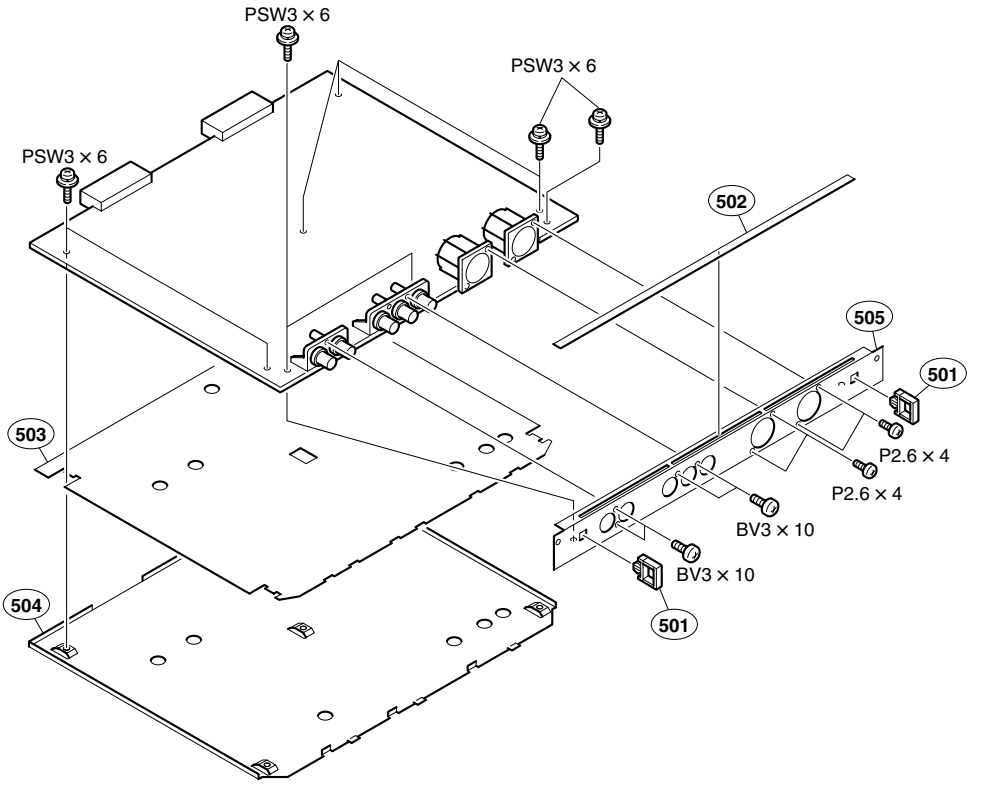


No.	Part No.	SP	Description
401	3-172-089-01	o	HANDLE
402	3-615-923-02	o	E.SHIELD (B)
403	3-616-313-02	o	SHEET, INSULATING (ENC/DEC/IF)
404	3-616-314-01	o	PLATE, SHIELD (ENC/DEC/IF)
405	3-623-295-01	o	PANEL(F), PWB (ENC-58)

Screws/Washers

	7-682-947-01	s	SCREW +PSW3X6 (EP-FE/ZN/CM2)

http://getMANUAL.com



No. Part No. SP Description

501 3-172-089-01 o HANDLE
502 3-615-923-02 o E.SHIELD (B)
503 3-616-313-02 o SHEET, INSULATING (ENC/DEC/IF)
504 3-616-314-01 o PLATE, SHIELD (ENC/DEC/IF)
505 3-623-296-01 o PANEL(F), PWB (DEC-117)

Screws/Washers

7-621-775-10 s SCREW +B2.6X4 (EP-FE/ZNBK/CM2)
7-682-947-01 s SCREW +PSW3X6 (EP-FE/ZN/CM2)
7-685-647-79 s SCREW +BVTP3X10 (EP-FE/ZNBK/CM2)

7-3. Electrical Parts List

7-3-1. Frame

Ref. No. or Q'ty	Part No.	SP	Description
CN1001	⚠ 1-251-385-11	s	INLET (WITH NOISE FILTER)
FAN1	1-763-175-11	s	FAN, DC
FAN2	1-763-175-11	s	FAN, DC
FAN3	1-763-175-11	s	FAN, DC
FAN4	1-763-175-11	s	FAN, DC
LF1001	⚠ 1-234-164-11	s	FILTER, NOISE
S1	⚠ 1-692-622-11	s	SWITCH, POWER
HN1001	⚠ 1-959-079-11	o	HARNESS, SUB (H2) (CN1001 to LF1001)
HN1002	⚠ 1-959-078-11	o	HARNESS, SUB (H1) (CN1001 to ground)
HN1003	⚠ 1-959-080-11	o	HARNESS, SUB (H3) (CN1001 to LF1001)
HN1004	⚠ 1-959-929-12	o	HARNESS, SUB (AC) (CN10/AC-205 board to LF1001)
HN1005	1-959-088-11	o	HARNESS, SUB (H269) (CN1/LE-225 board to CN37/MB-756 board)
(To CN1/LE-225 board)			
1pc	1-569-207-11	o	HOUSING, CONNECTOR 14P
14pcs	1-569-193-11	o	TERMINAL, SOLDERLESS
(To CN37/MB-756 board)			
1pc	1-569-207-11	o	HOUSING, CONNECTOR 14P
14pcs	1-569-193-11	o	TERMINAL, SOLDERLESS
HN1006	1-959-085-11	o	HARNESS, SUB (H192) (CN1/LE-224 board to CN323/MB-755A board)
(CN1/LE-224 board)			
1pc	1-569-520-11	o	HOUSING, CONNECTOR 10P
10pcs	1-565-977-11	s	TERMINAL, SOLDERLESS
(CN323/MB-755A board)			
1pc	1-569-520-11	o	HOUSING, CONNECTOR 10P
10pcs	1-565-977-11	s	TERMINAL, SOLDERLESS
HN1007	1-959-083-11	o	HARNESS, SUB (H6) (CN8/AC-205 board to CN341/MB-755A board)
(To CN8/AC-205 board)			
1pc	1-563-888-11	s	HOUSING, CONNECTOR 10P
(To CN341/MB-755A board)			
1pc	1-563-888-11	s	HOUSING, CONNECTOR 10P
HN1008	1-959-082-11	o	HARNESS, SUB (H5) (CN7/AC-205 board to CN342/MB-755A board)
HN1009	1-959-084-11	o	HARNESS, SUB (H188) (CN4/AC-205 board to CN30/MB-756 board)
HN1010	1-959-084-11	o	HARNESS, SUB (H188) (CN5/AC-205 board to CN31/MB-756 board)
HN1011	1-959-084-11	o	HARNESS, SUB (H188) (CN6/AC-205 board to CN32/MB-756 board)
HN1012	1-959-086-11	o	HARNESS, SUB (H193) (CN1/LE-193 board to CN33/MB-756 board)
(To CN1/LE-193 board)			
1pc	1-561-518-00	o	CONNECTOR HOUSING, ILG 6P
6pcs	1-560-372-00	o	TERMINAL,PRESS
HN1013	1-959-086-11	o	HARNESS, SUB (H193) (CN1/LE-193 board to CN34/MB-756 board)
(To CN1/LE-193 board)			
1pc	1-561-518-00	o	CONNECTOR HOUSING, ILG 6P
6pcs	1-560-372-00	o	TERMINAL,PRESS

7-3-2. Printed Circuit Boards List

```
Part No.    SP Description

For VSR-2000

A-8319-592-A o MOUNTED CIRCUIT BOARD, MB-756
A-8319-594-A o MOUNTED CIRCUIT BOARD, LE-193
A-8319-603-A o MOUNTED CIRCUIT BOARD, IF-678
A-8324-440-A o MOUNTED CIRCUIT BOARD, CCM-37A
A-8322-853-A o MOUNTED CIRCUIT BOARD, AC-205

A-8323-228-A s MOUNTED CIRCUIT BOARD, PU-113
A-8323-229-A o MOUNTED CIRCUIT BOARD, SY-283
A-8323-232-A o MOUNTED CIRCUIT BOARD, MB-755A
A-8323-649-A s MOUNTED CIRCUIT BOARD, SPG-15A

For BKSH-209G

A-8311-399-A o MOUNTED CIRCUIT BOARD, CN-1405
```

7-3-3. Packing Materials and Supplied Accessories List

```
Ref. No.
or Q'ty  Part No.    SP Description

For VSR-2000

1pc      3-605-401-01 o LABEL,HDD NO.
2pcs     3-613-640-01 o HOLDER (C), PLUG
1pc      3-704-356-01 o SHEET(STANDARD),PROTECTION(PLA


For BKSH-209G/BKSR-2020/2031

1pc      3-605-401-01 o LABEL,HDD NO.
```

7-3-4. Power Cords List

```
Ref. No.
or Q'ty  Part No.    SP Description

<For the customer in Japan>

1pc    ⚠ 1-776-997-11 s CORD, POWER


<For the customer in the U.S.A. and Canada>

1pc    ⚠ 1-557-377-11 s CORD, POWER


<For the customer in the United Kingdom>

1pc    ⚠ 1-782-929-11 s CORD, POWER
```

7-3-5. Optional Fixtures List

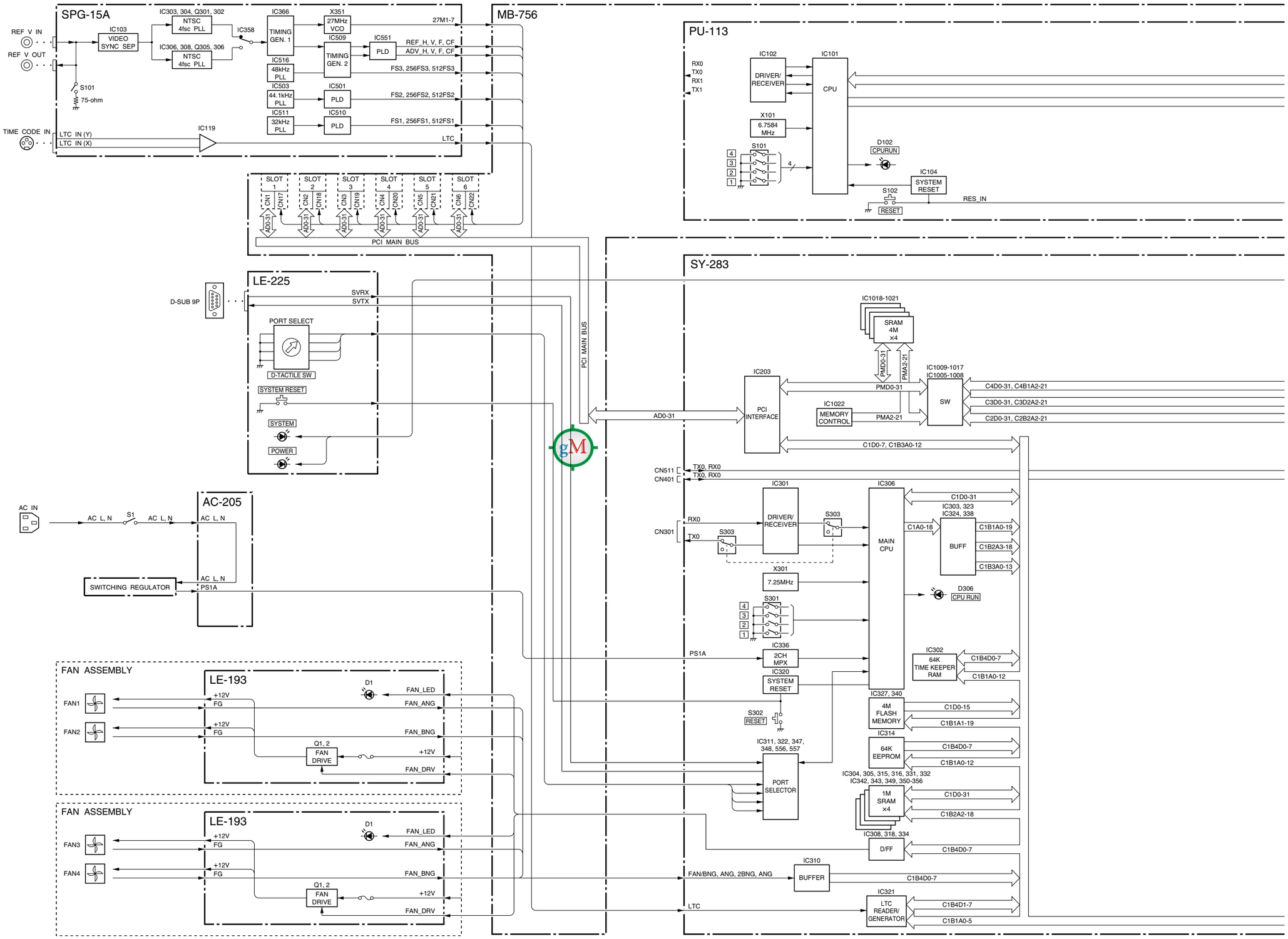
```
Part No.    SP Description

A-8321-004-A o EXTENTION BOARD, EX-647
               (For SPG-15A board)

A-8321-005-A o EXTENTION BOARD, EX-648
               (For PU-113 board)

A-8321-006-A o EXTENTION BOARD, EX-649
               (For SY-283 board and OPTIONAL boards)

J-6530-070-A o TORQUE SCREW DRIVER, SHOCKLESS
```

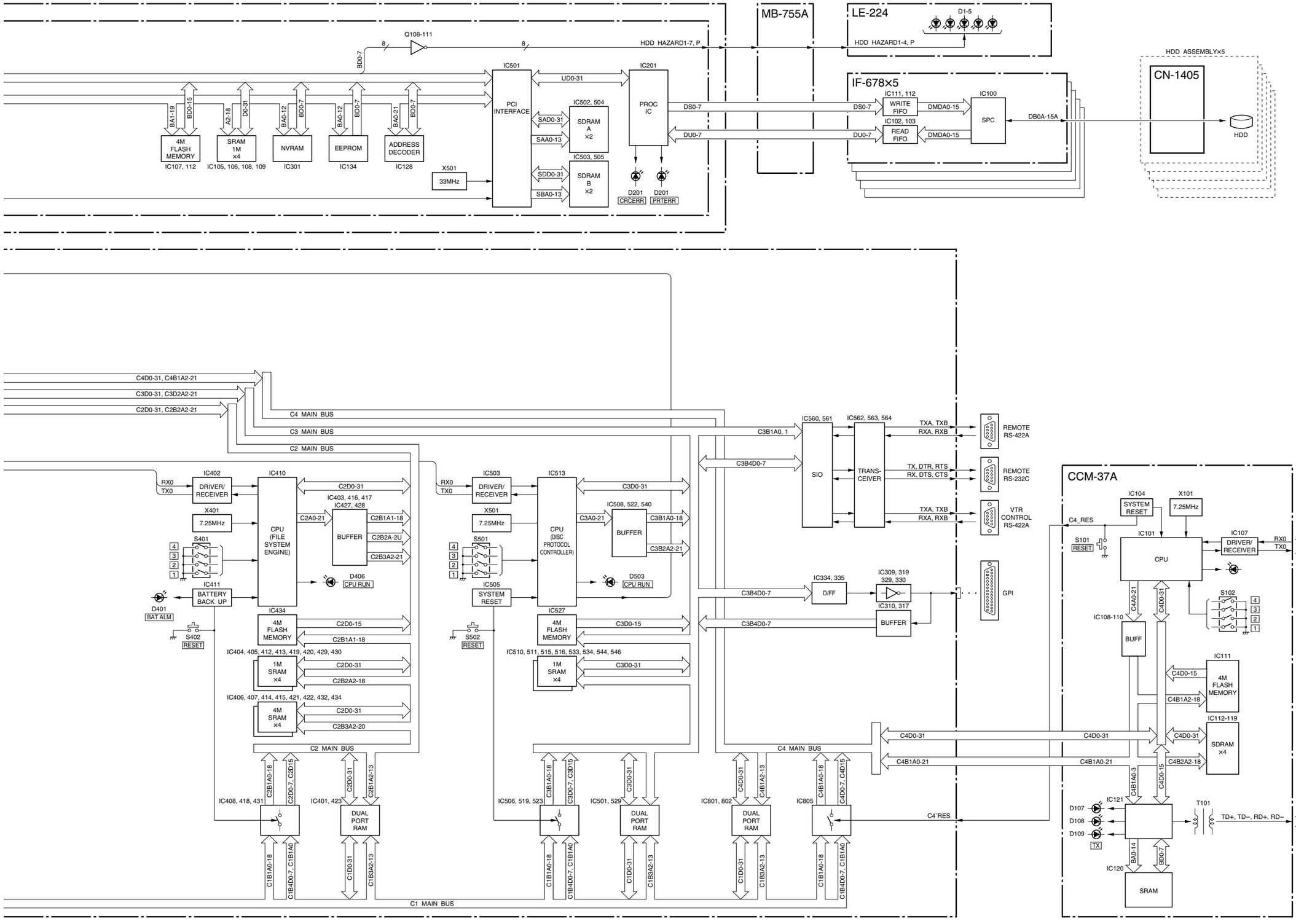
Section 8
Block Diagrams

Index

Board Name		Function	Page
Overall	(VSR-2000)	–	8-2
CCM-38A	(BKSR-2070)	Ethernet control	8-17
DEC-117	(BKSR-2031)	Decoder (MPEG to SDI)	8-13
DEC-122/128	(BKSR-2030)	Decoder (SDI to MPEG)	8-16
ENC-58	(BKSR-2020)	Encoder (SDI to MPEG)	8-12
ENC-62	(BKSR-2021)	Encoder (MPEG to SDI)	8-14
PU-113	(VSR-2000)	HDD array control	8-4
SPG-15A	(VSR-2000)	Sync generator	8-6
SY-283	(VSR-2000)	System control	8-8
Frame Wiring	(VSR-2000)	–	8-18

8-1

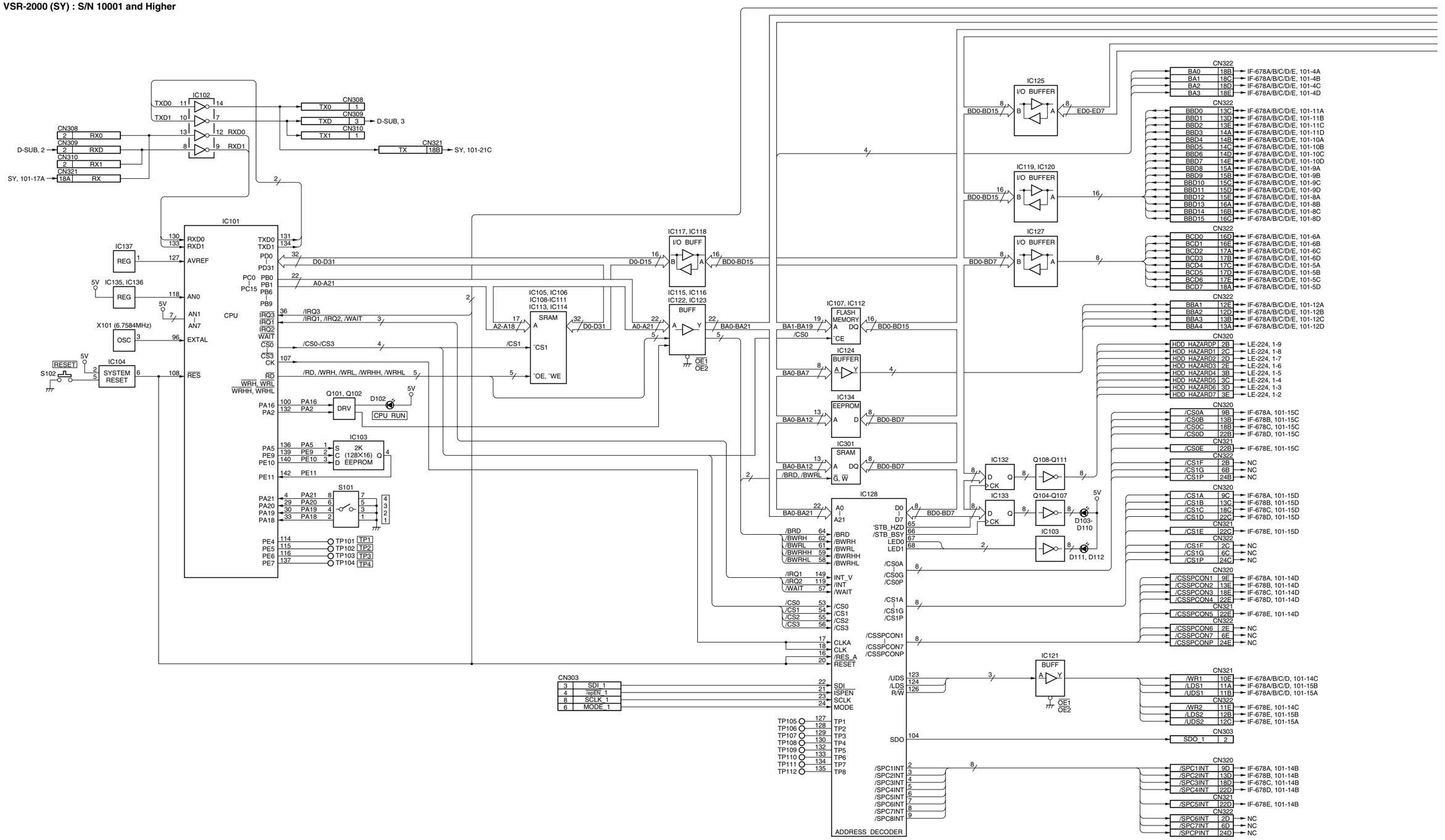

SPG-15A
REF V IN
REF V OUT
IC103
VIDEO SYNC SEP
IC303, 304, Q301, 302
NTSC 4fsc PLL
IC306, 308, Q305, 306
NTSC 4fsc PLL
IC358
IC366
TIMING GEN. 1
X351
27MHz VCO
27M1-7
IC509
TIMING GEN. 2
IC551
PLD
REF_H, V, F, CF
ADV_H, V, F, CF
IC516
48kHz PLL
FS3, 256FS3, 512FS3
IC503
44.1kHz PLL
IC501
PLD
FS2, 256FS2, 512FS2
IC511
32kHz PLL
IC510
PLD
FS1, 256FS1, 512FS1
S101
75-ohm
TIME CODE IN
LTC IN (Y)
LTC IN (X)
IC119
LTC
MB-756
SLOT 1
SLOT 2
SLOT 3
SLOT 4
SLOT 5
SLOT 6
CN1
CN17
CN2
CN18
CN3
CN19
CN4
CN20
CN5
CN21
CN6
CN22
AD0-31
PCI MAIN BUS
PU-113
RX0
TX0
RX1
TX1
IC102
DRIVER/ RECEIVER
IC101
CPU
X101
6.7584 MHz
S101
D102
CPURUN
IC104
SYSTEM RESET
S102
RESET
RES_IN
LE-225
D-SUB 9P
SVRX
SVTX
PORT SELECT
D-TACTILE SW
SYSTEM RESET
SYSTEM
POWER
PCI MAIN BUS
SY-283
IC1018-1021
SRAM 4M ×4
PMD0-31
PMA2-21
IC203
PCI INTERFACE
IC1009-1017
IC1005-1008
SW
C4D0-31, C4B1A2-21
C3D0-31, C3D2A2-21
C2D0-31, C2B2A2-21
AD0-31
IC1022
MEMORY CONTROL
PMA2-21
C1D0-7, C1B3A0-12
CN511
CN401
TX0, RX0
TX0, RX0
IC301
DRIVER/ RECEIVER
IC306
MAIN CPU
C1D0-31
IC303, 323
IC324, 338
BUFF
C1A0-18
C1B1A0-19
C1B2A3-18
C1B3A0-13
RX0
CN301
TX0
S303
S303
X301
7.25MHz
D306
CPU RUN
S301
IC336
2CH MPX
PS1A
IC320
SYSTEM RESET
S302
RESET
IC302
64K TIME KEEPER RAM
C1B4D0-7
C1B1A0-12
IC327, 340
4M FLASH MEMORY
C1D0-15
C1B1A1-19
IC314
64K EEPROM
C1B4D0-7
C1B1A0-12
IC311, 322, 347, 348, 556, 557
PORT SELECTOR
IC304, 305, 315, 316, 331, 332
IC342, 343, 349, 350-356
1M SRAM ×4
C1D0-31
C1B2A2-18
IC308, 318, 334
D/FF
C1B4D0-7
IC310
BUFFER
FAN/BNG, ANG, 2BNG, ANG
C1B4D0-7
IC321
LTC READER/ GENERATOR
LTC
C1B4D1-7
C1B1A0-5
AC-205
AC IN
AC L, N
S1
AC L, N
AC L, N
AC L, N
SWITCHING REGULATOR
PS1A
FAN ASSEMBLY
LE-193
FAN1
FAN2
+12V
FG
D1
FAN_LED
FAN_ANG
FAN_BNG
Q1, 2
FAN DRIVE
+12V
FAN_DRV
FAN ASSEMBLY
LE-193
FAN3
FAN4
+12V
FG
D1
FAN_LED
FAN_ANG
FAN_BNG
Q1, 2
FAN DRIVE
+12V
FAN_DRV

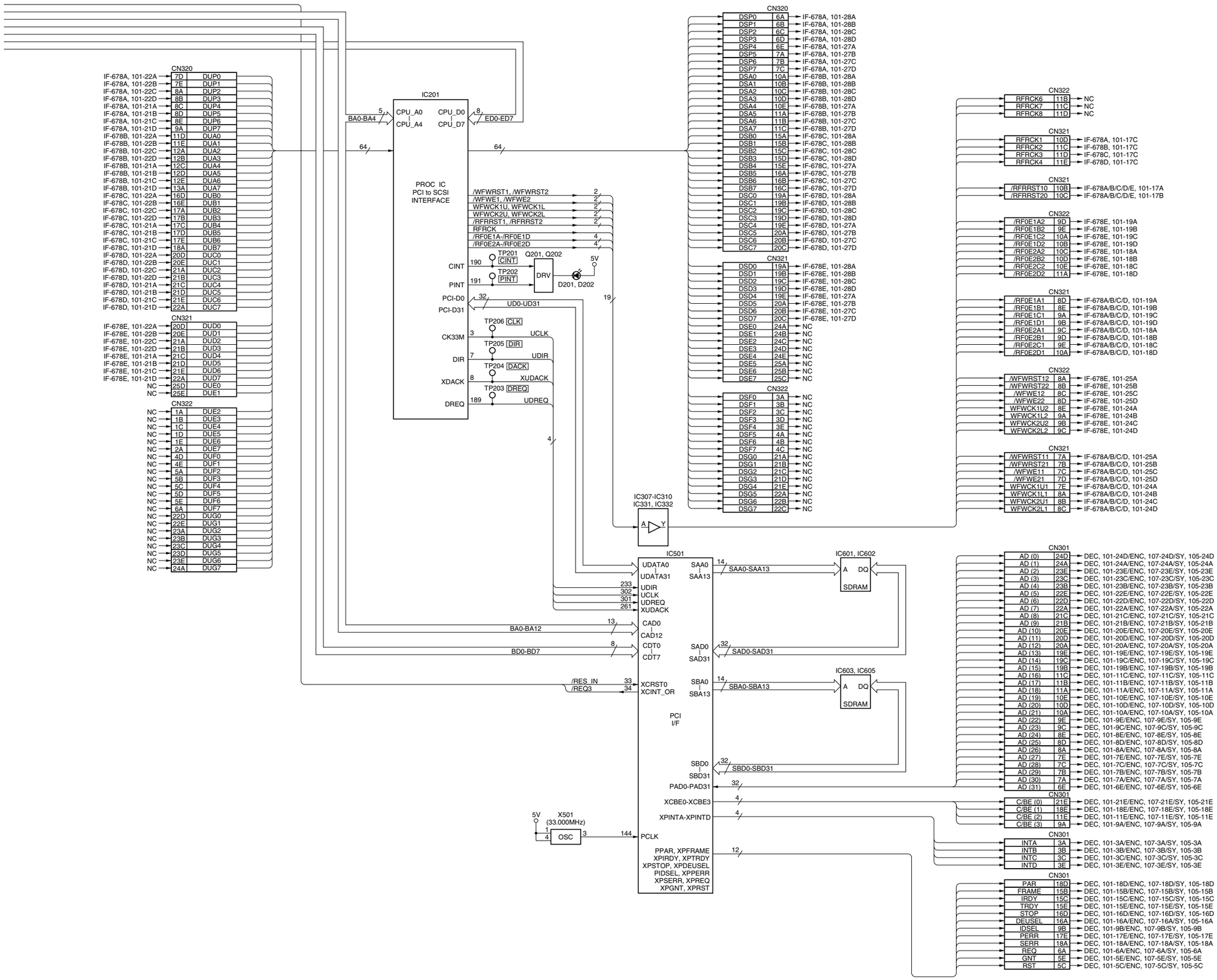


Overall

B-VSR-OVERALL

VSR-2000 (SY) : S/N 10001 and Higher



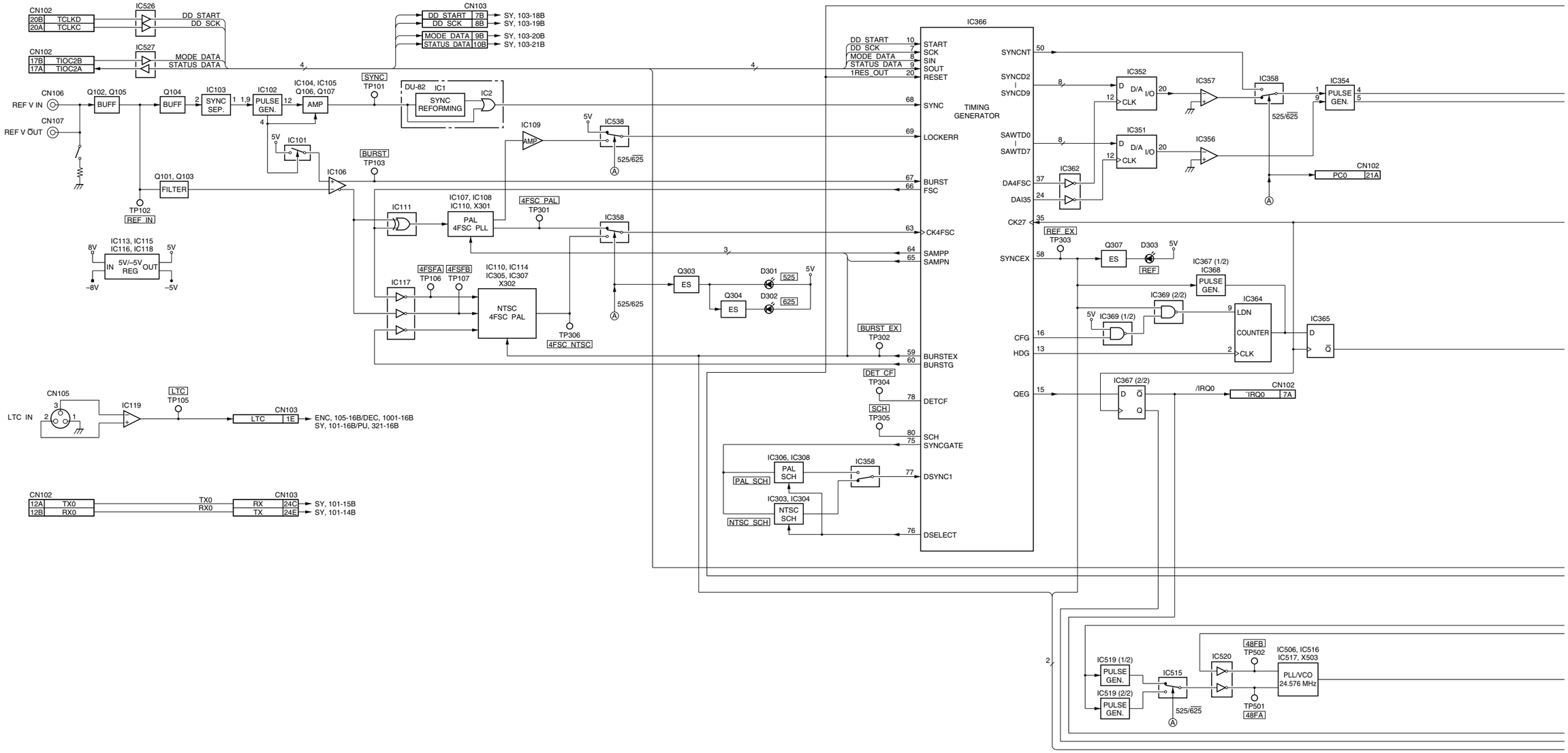


HDD array control

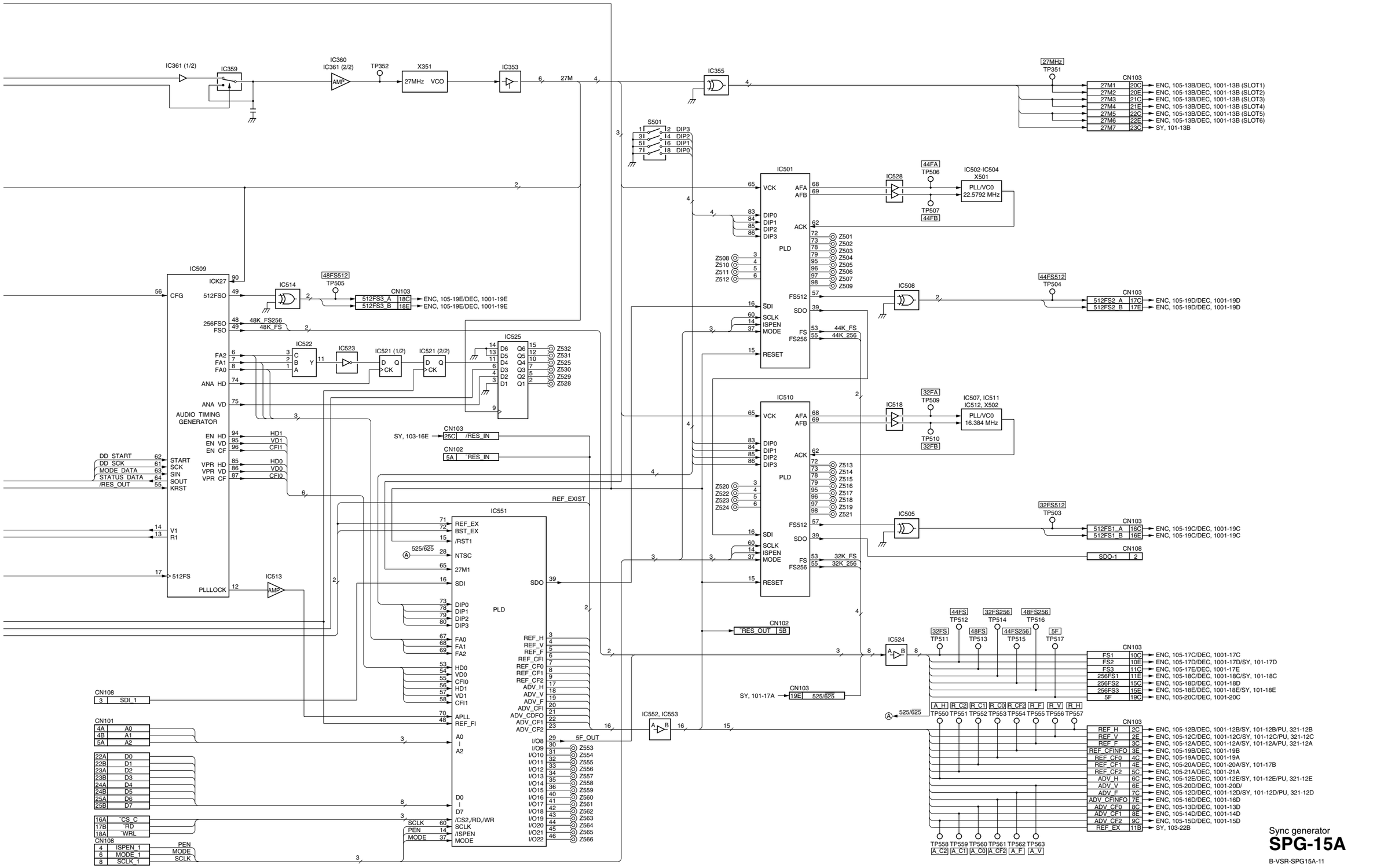
PU-113

B-VSR-PU113-11

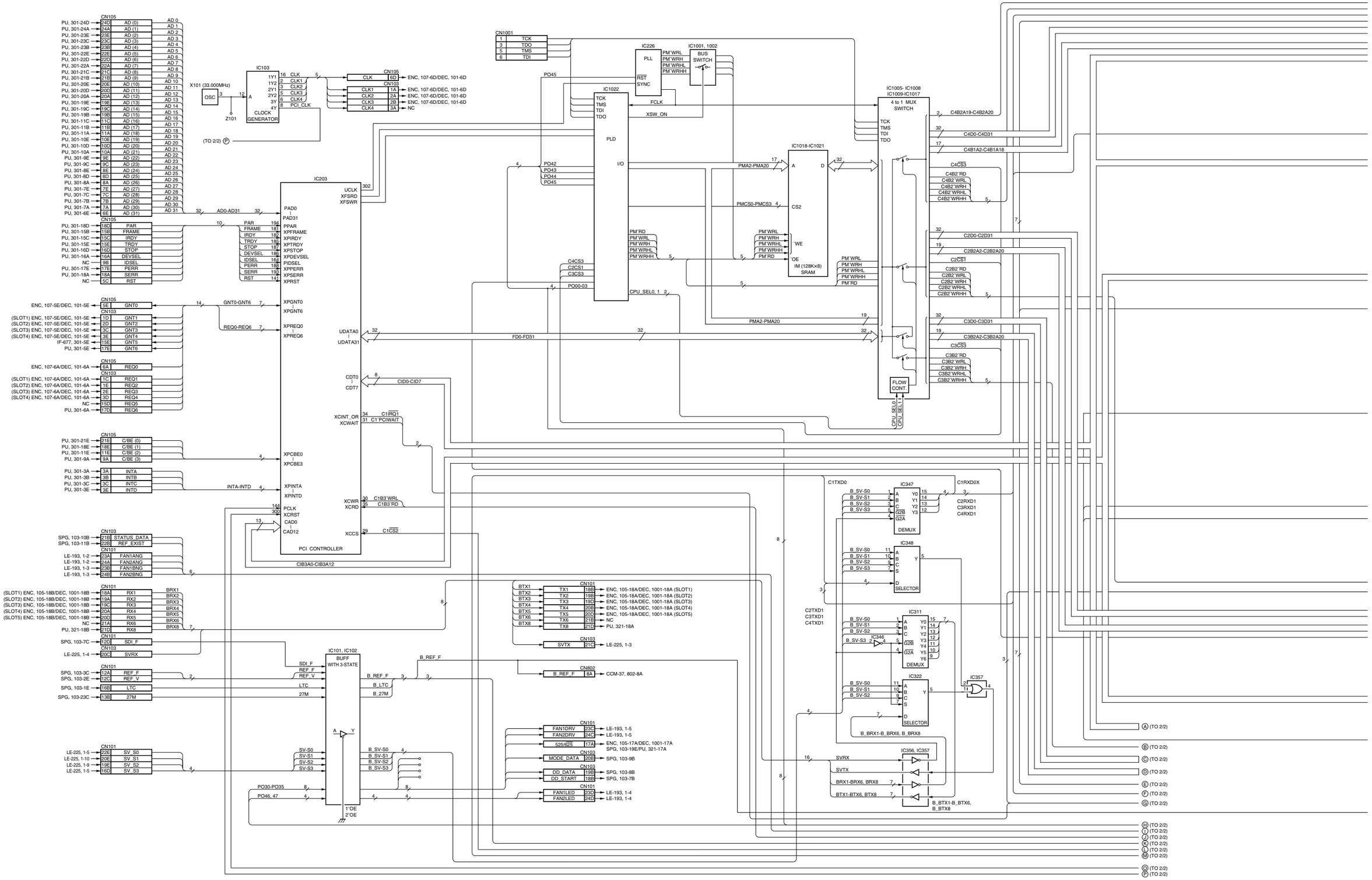
VSR-2000 (SY) : S/N 10001 and Higher

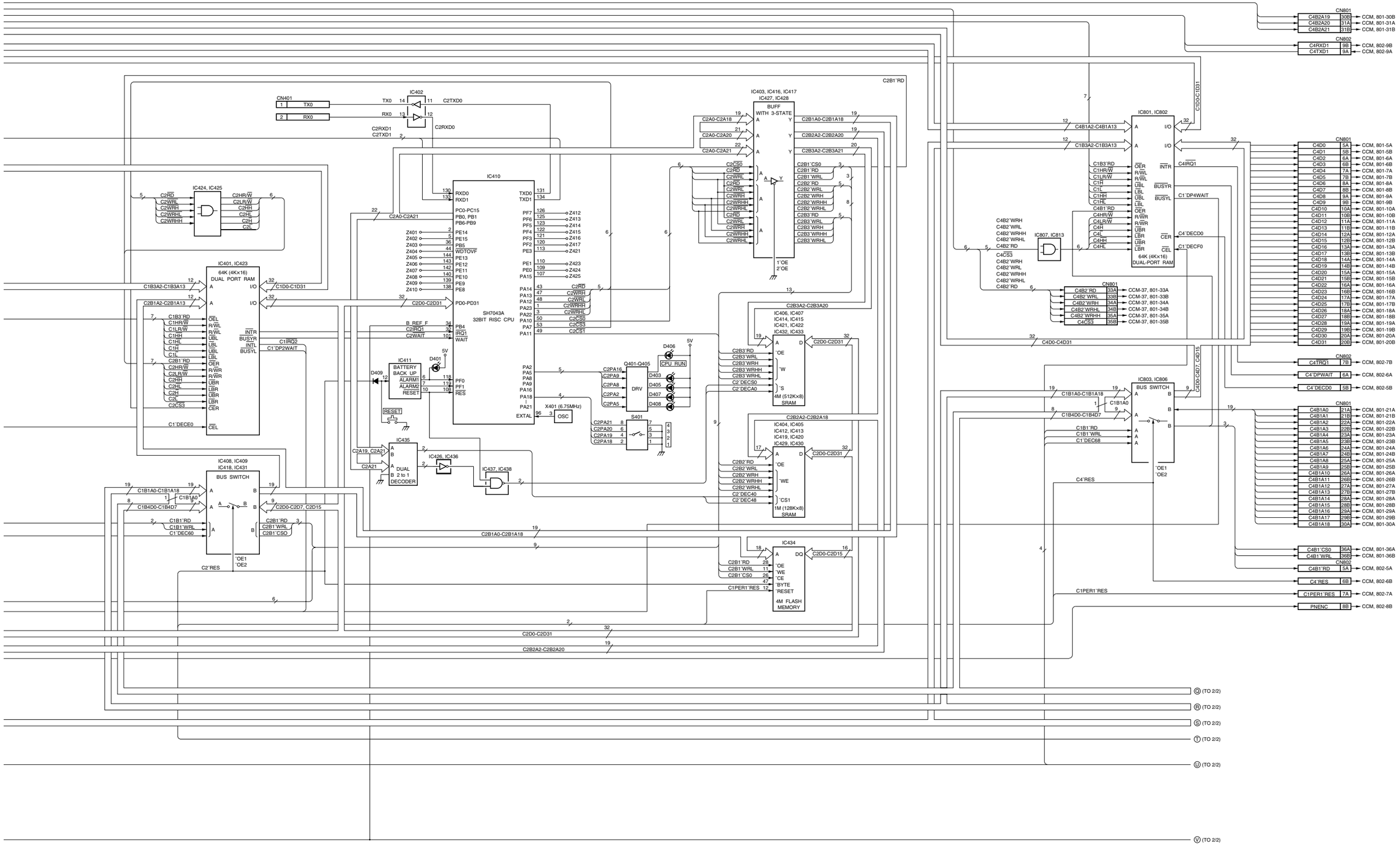


http://getMANUAL.com



VSR-2000 (SY) : S/N 10001 and Higher



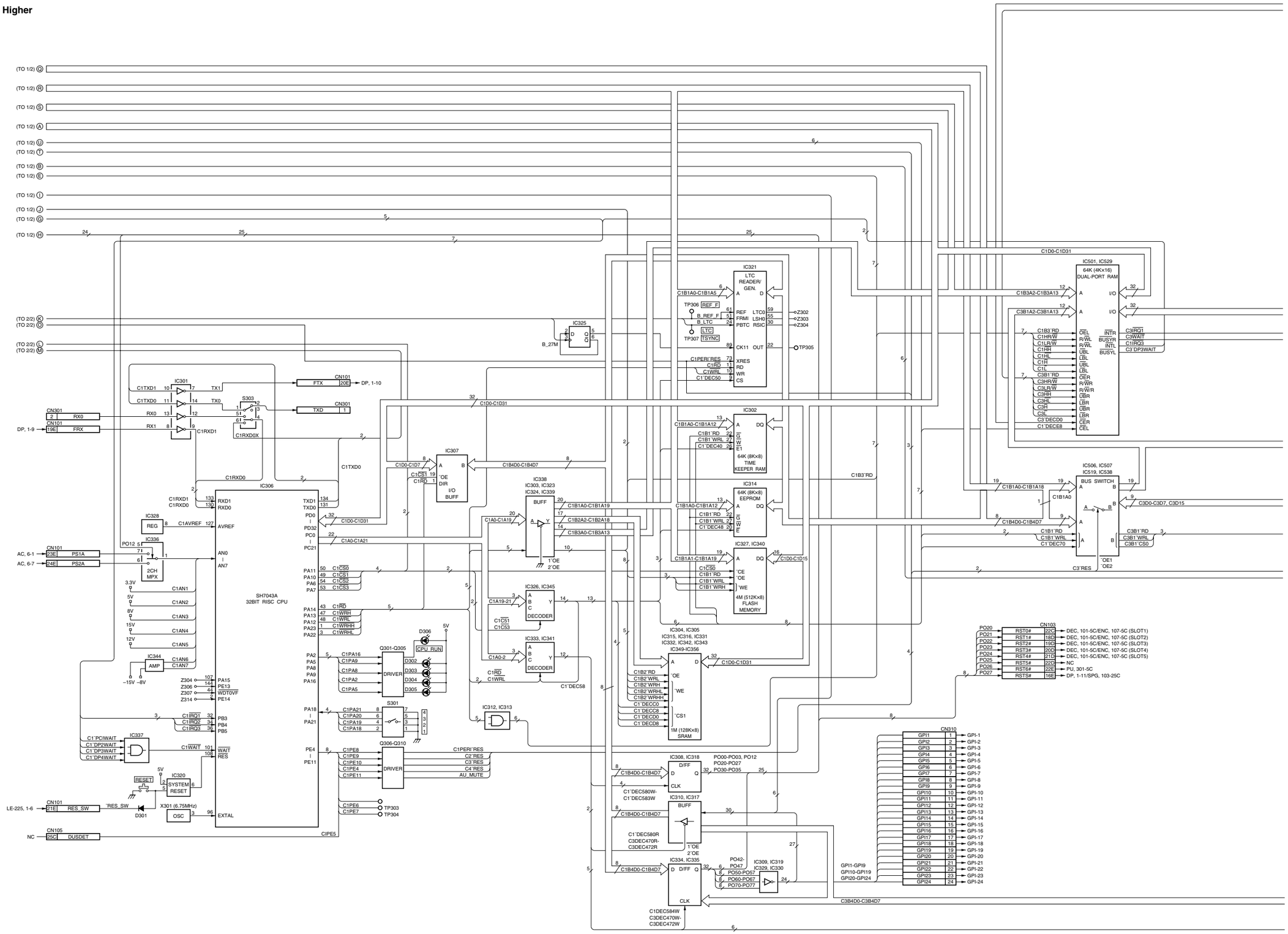


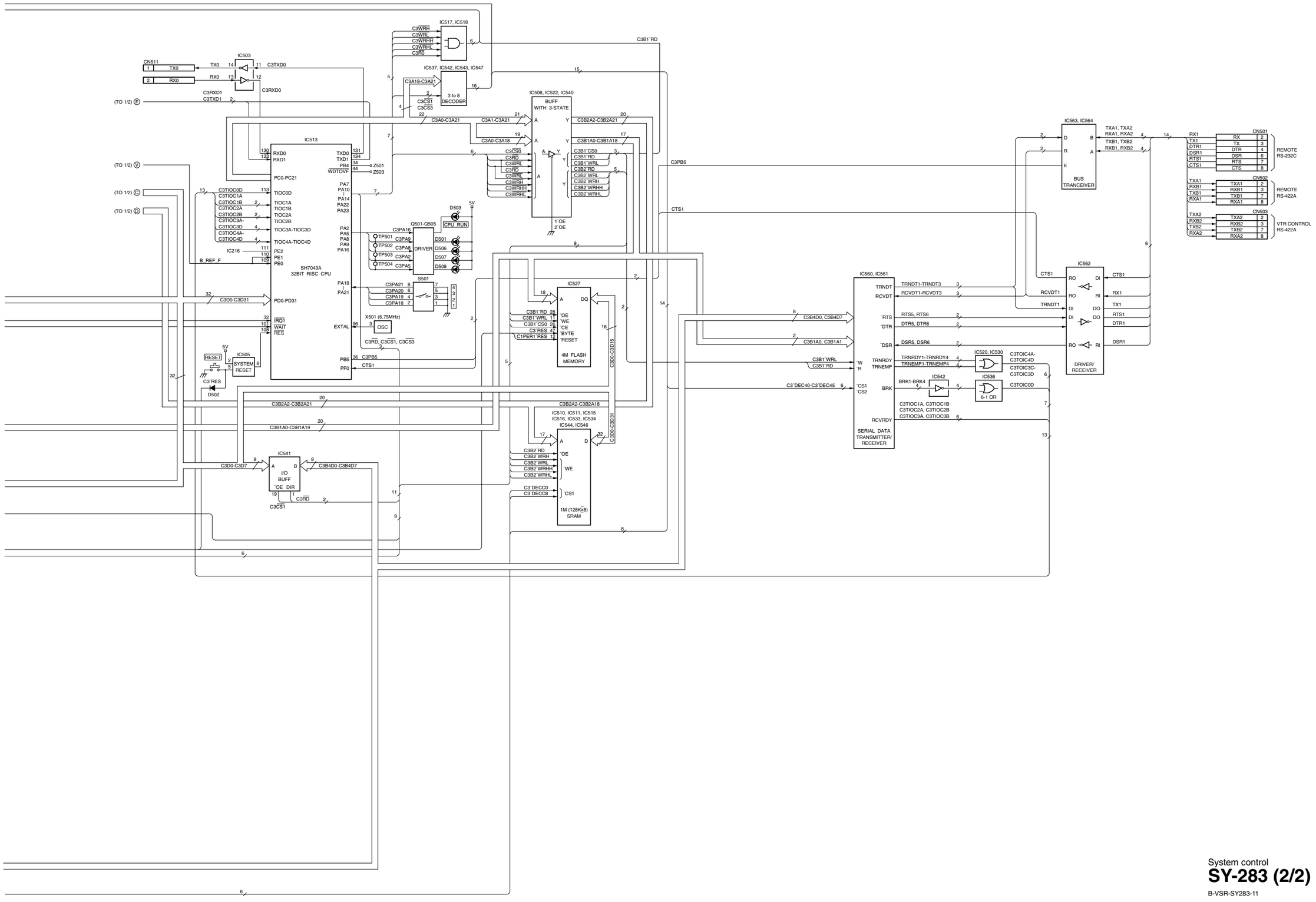
System control

SY-283 (1/2)

B-VSR-SY283-11

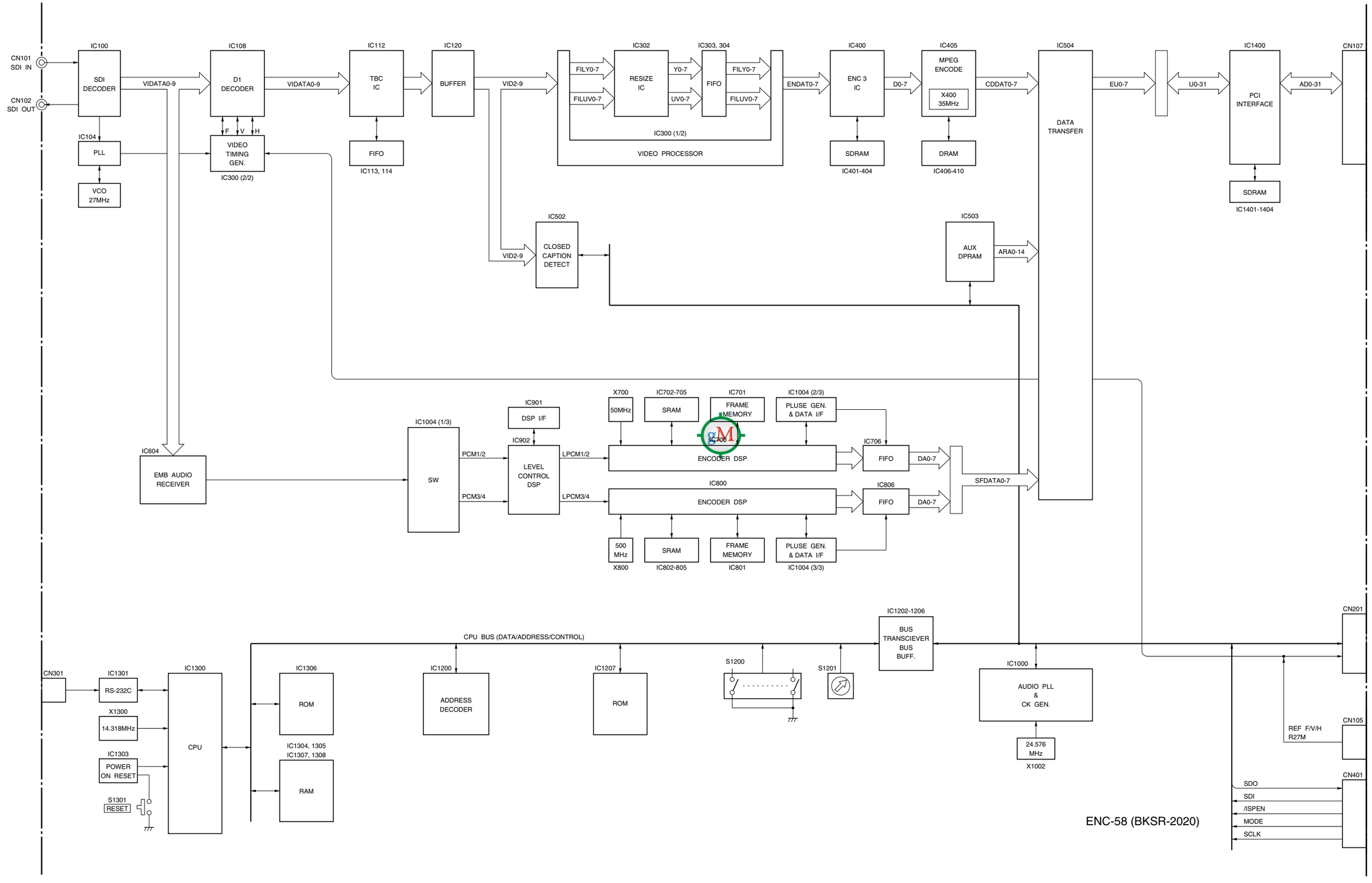
VSR-2000 (SY) : S/N 10001 and Higher





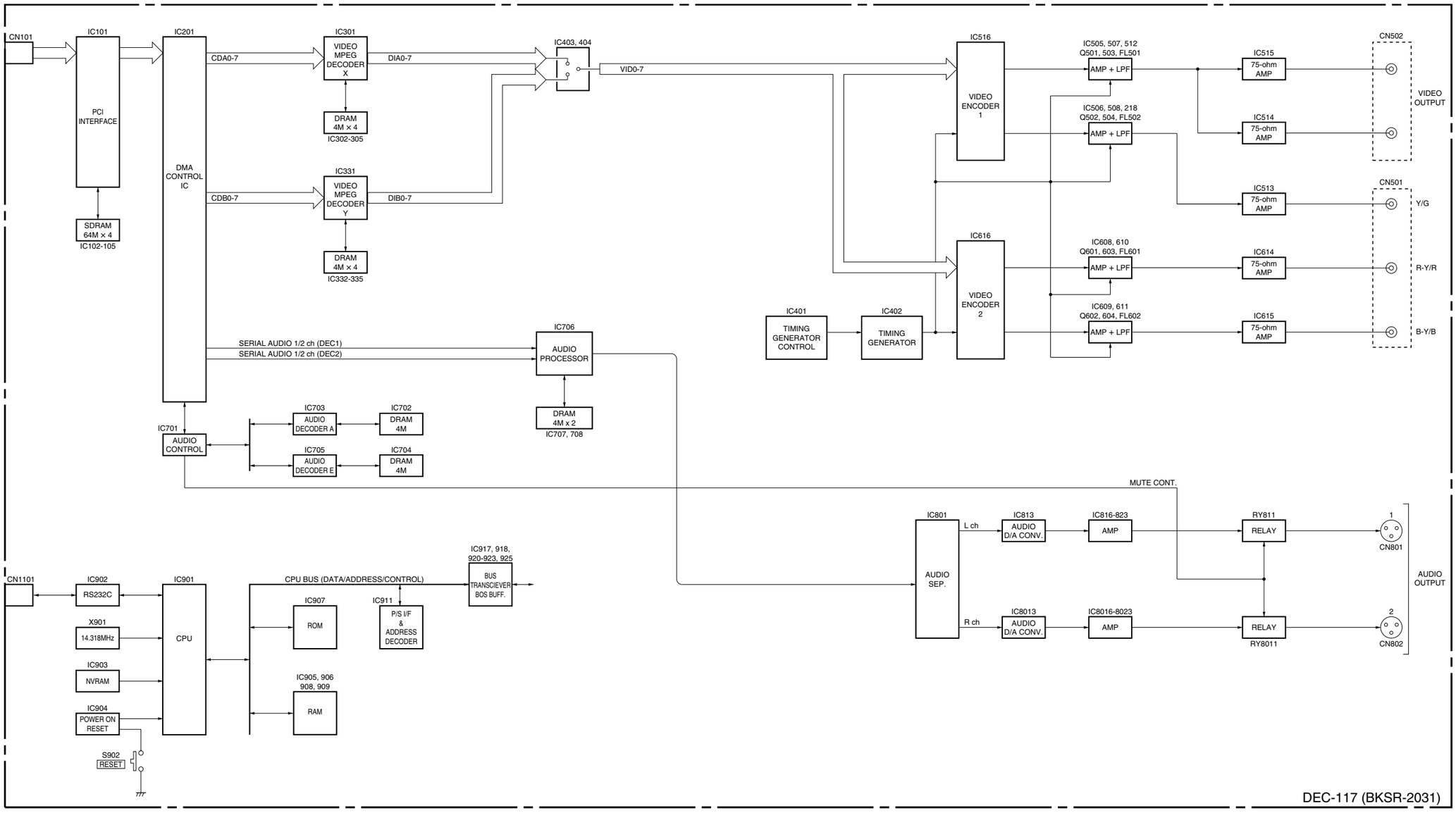
System control
SY-283 (2/2)
B-VSR-SY283-11

BKSR-2020 (SY) : S/N 10001 and Higher



ENC-58 (BKSR-2020)

BKSR-2031 (SY) : S/N 10001 and Higher

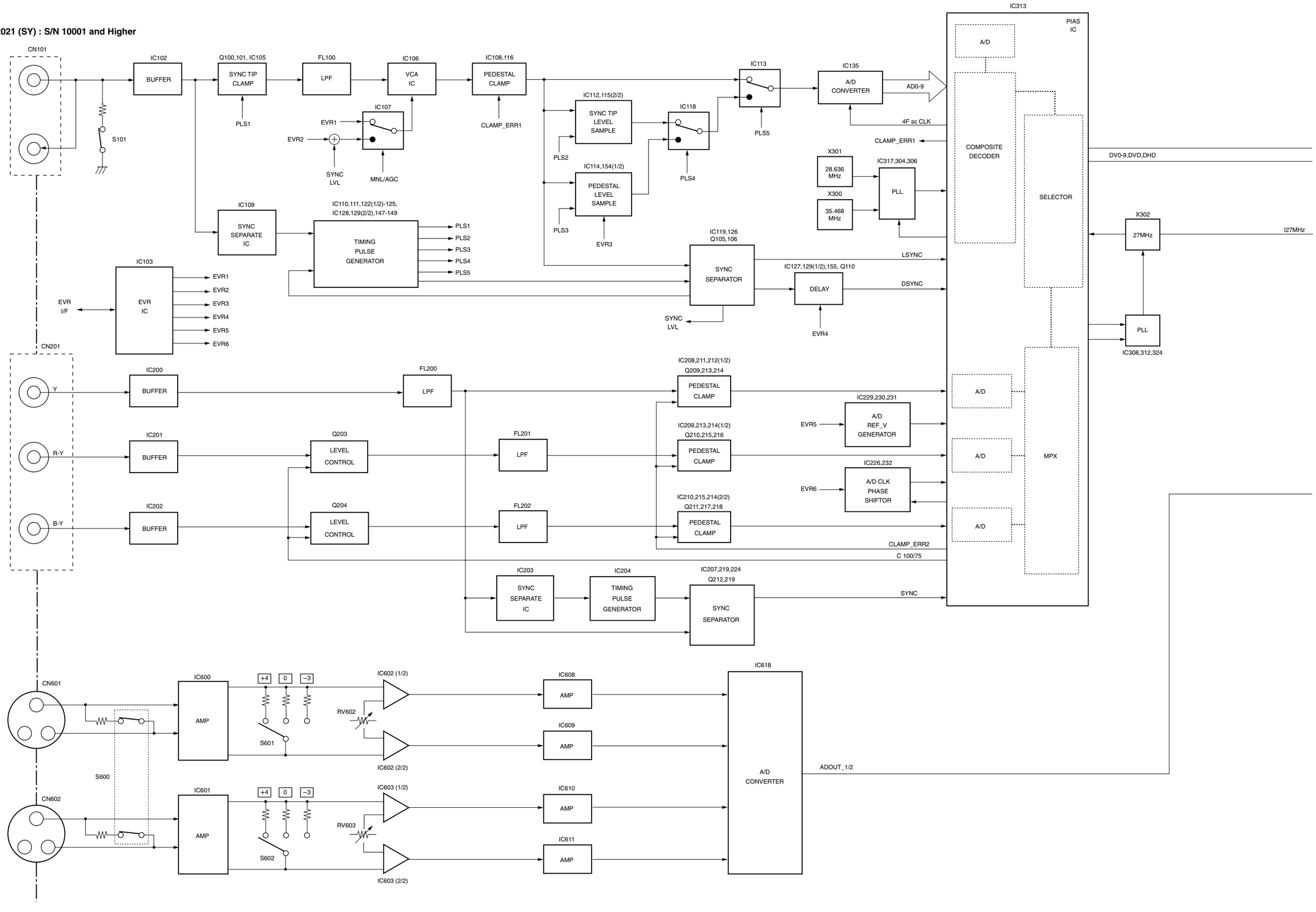


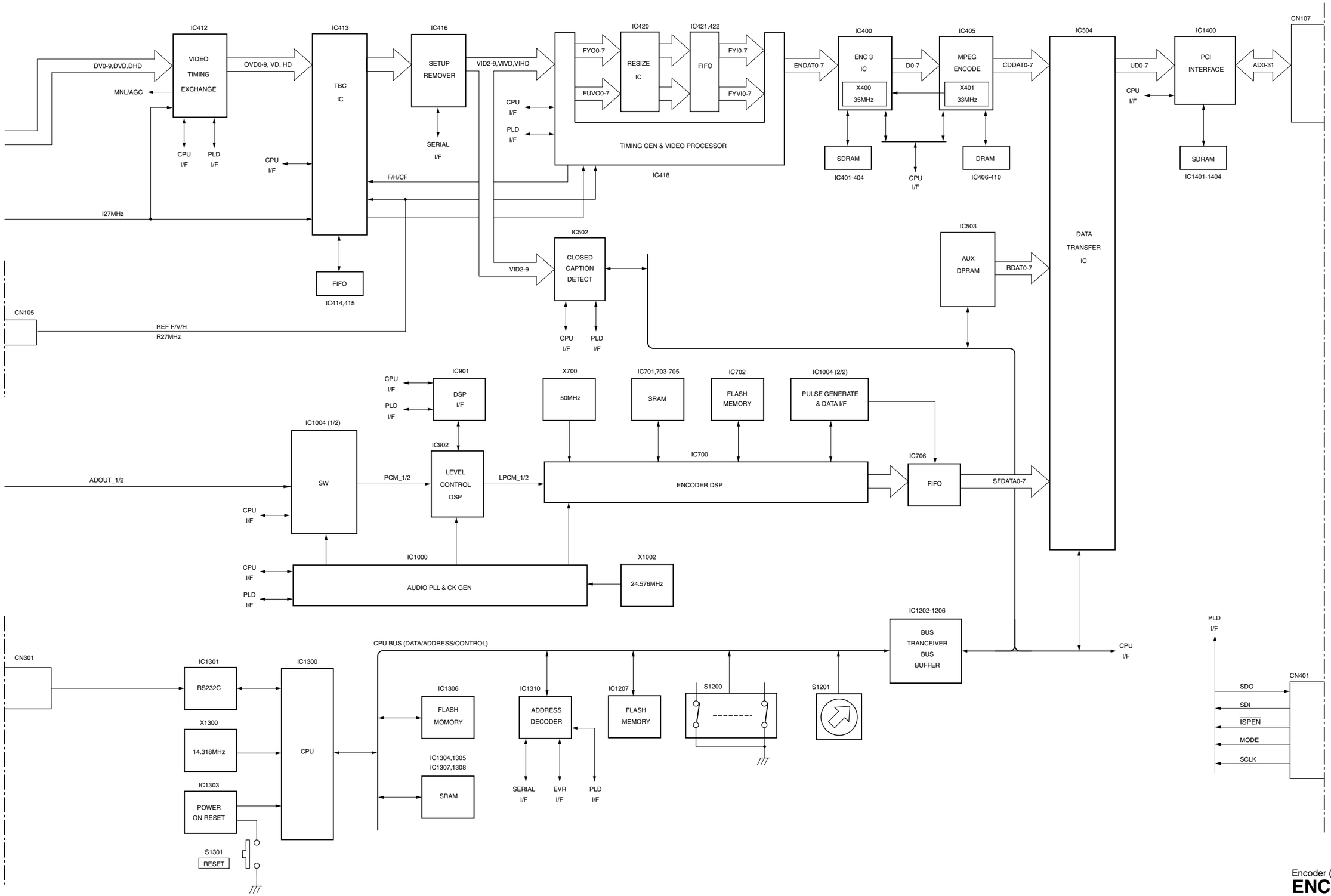
Decoder (MPEG to SDI)

DEC-117

B-VSR-DEC117-11

BKSR-2021 (SY) : S/N 10001 and Higher



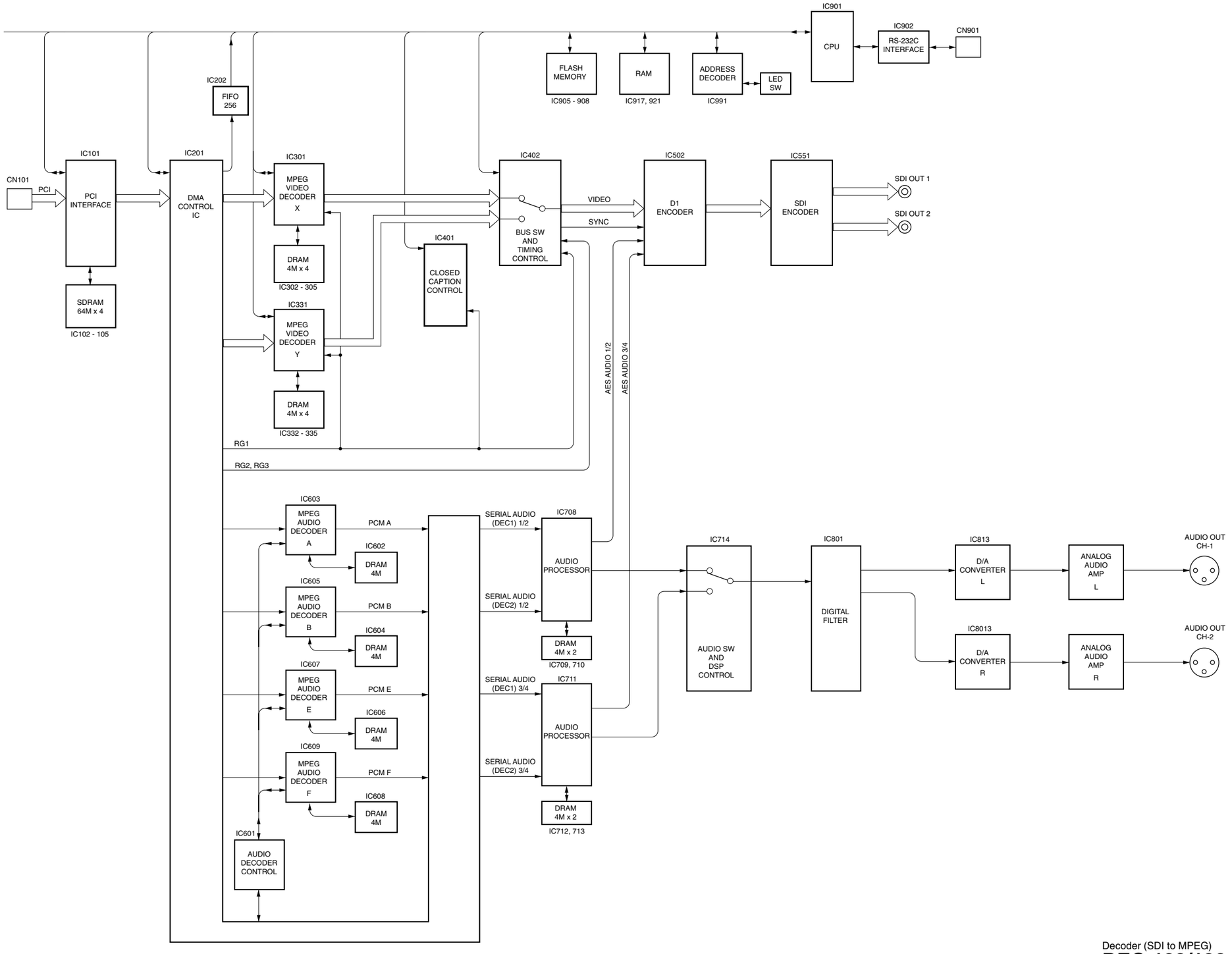


Encoder (MPEG to SDI)

ENC-62

B-VSR-ENC62-11

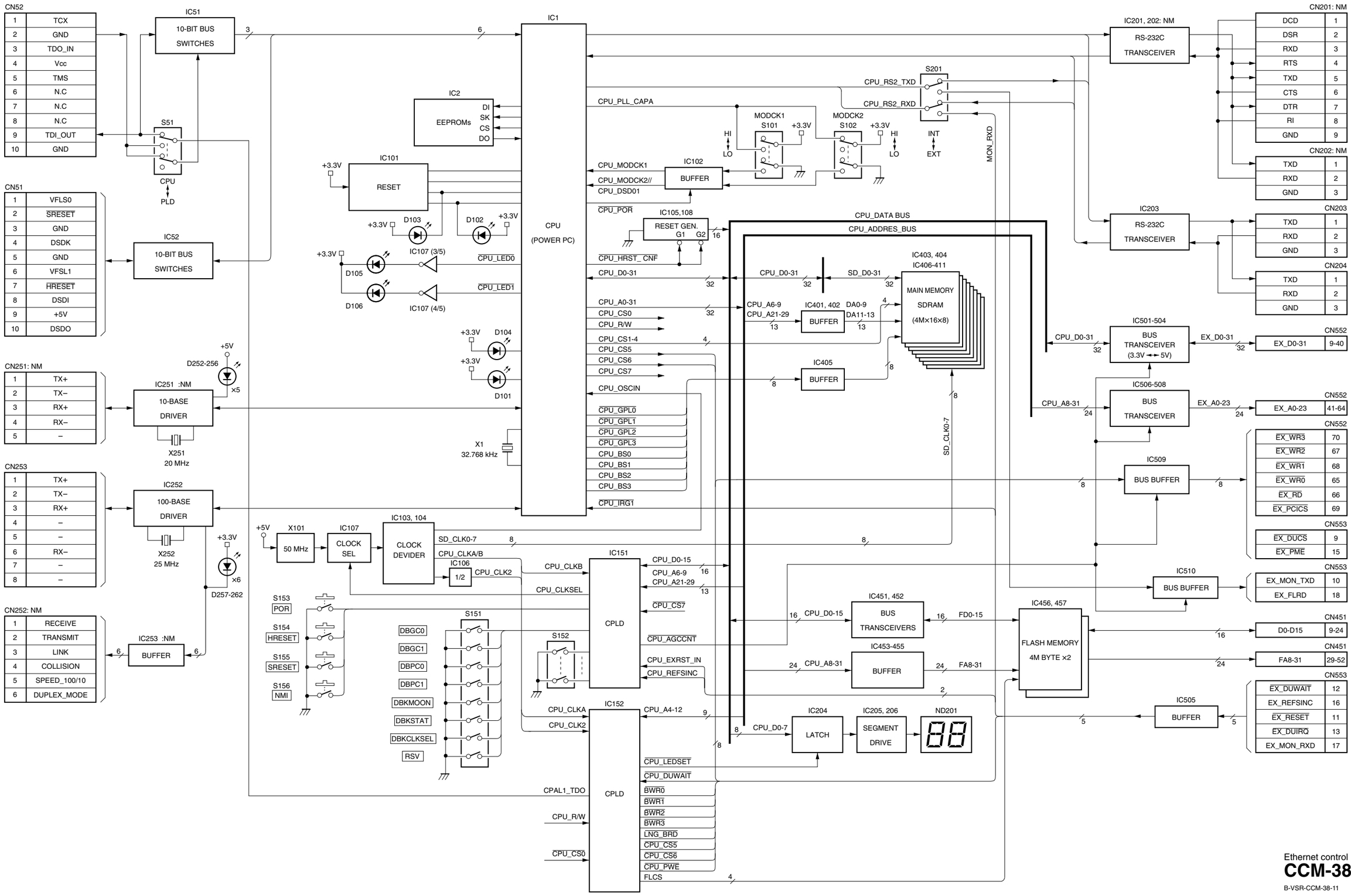
BKSR-2030 (SY) : S/N 10001 and Higher



Decoder (SDI to MPEG)
DEC-122/128
B-VSR-DEC122/128-11

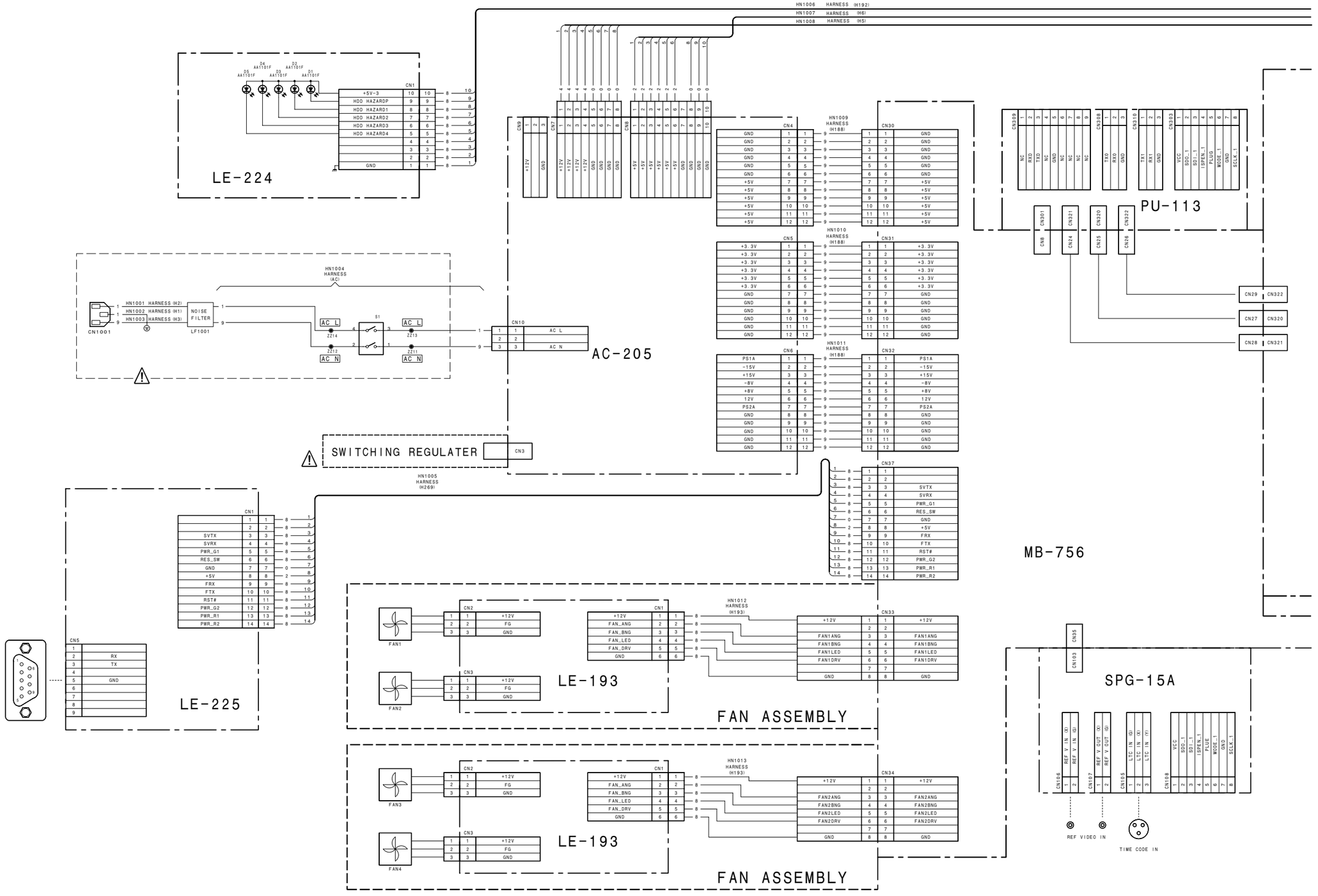
http://getMANUAL.com

BKSR-2070 (SY) : S/N 10001 and Higher

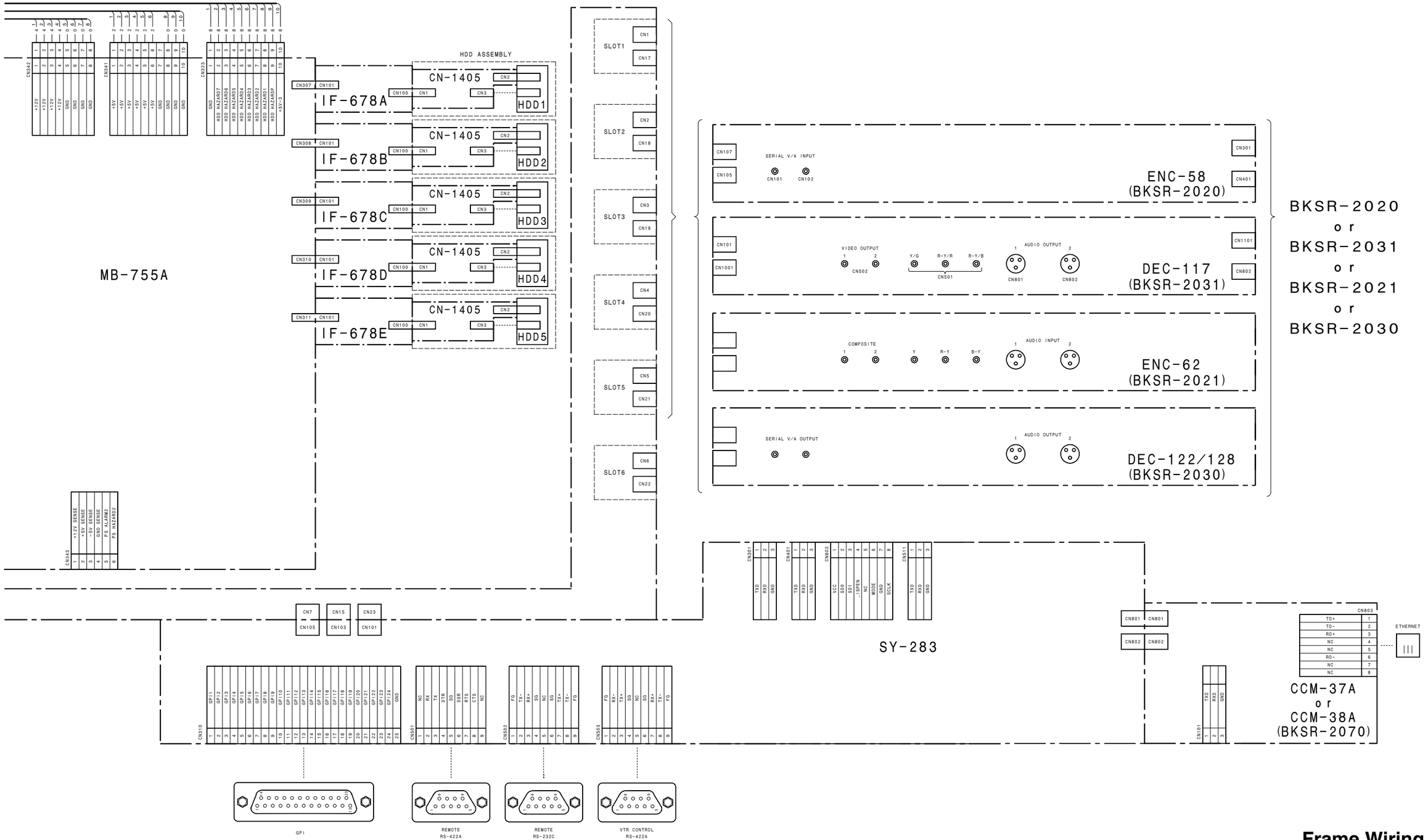


Ethernet control
CCM-38A
B-VSR-CCM-38-11

VSR-2000 (SY) : S/N 10001 and Higher



Frame Wiring



Frame Wiring

8-19

このマニュアルに記載されている事柄の著作権は当社にあります。
従って，当社の許可なしに無断で複写したり，説明内容(操作，保守等)と異なる目的で本マニュアルを使用することを禁止します。

The material contained in this manual consists of information that is the property of Sony Corporation.
Sony Corporation expressly prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation or maintenance of the equipment described in this manual without the express written permission of Sony Corporation.

Le matériel contenu dans ce manuel consiste en informations qui sont la propriété de Sony Corporation.
Sony Corporation interdit formellement la copie de quelque partie que ce soit de ce manuel ou son emploi pour tout autre but que des opérations ou entretiens de l'équipement à moins d'une permission écrite de Sony Corporation.

Das in dieser Anleitung enthaltene Material besteht aus Informationen, die Eigentum der Sony Corporation sind.
Die Sony Corporation untersagt ausdrücklich die Vervielfältigung jeglicher Teile dieser Anleitung oder den Gebrauch derselben für irgendeinen anderen Zweck als die Bedienung oder Wartung der in dieser Anleitung beschriebenen Ausrüstung ohne ausdrückliche schriftliche Erlaubnis der Sony Corporation.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

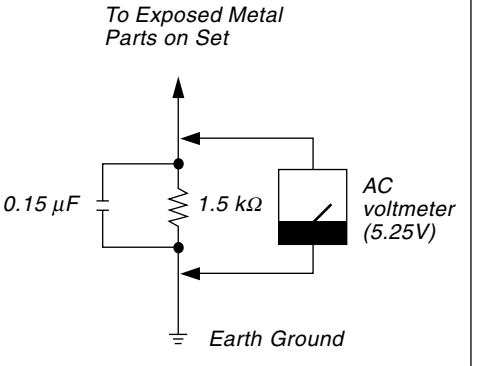


Fig A. Using an AC voltmeter to check AC leakage.

VSR-2000 (SY)
BKSR-2020 (SY)
BKSR-2021 (SY)
BKSR-2030 (SY)
BKSR-2031 (SY)
BKSR-2070 (SY)
BKSH-209G (SY) J, E
9-967-864-02

Sony Corporation
Communication System Solutions Network Company

Printed in Japan
2000. 12 16
©1999